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ABSTRACT

The purpose of this guide is to provide a short, ready source of information about the process and problems of the diagnostic assessment of preschool children. Formal test instruments frequently used in the assessment process are listed by category. Detailed discussions of the tests and useful information the classroom teacher can gain from the results are included. Test instruments listed were chosen for their apparent frequency of use in the field of early childhood education. Inclusion in the list does not signify approval by the authors or the sponsoring program. Efforts have been made to keep terminology and jargon at a minimum. Necessary professional terms are defined either in context or in the glossary. The first chapter describes the process and problems of assessment. Reliability, validity, measures of central tendency, and standard scores as well as test scores in relation to classroom performance are discussed in Chapter II. Chapter III discusses how tests are standardized, how the tests may be used, and what information test users should know about a test before it is employed in assessment. Chapters IV, V, VI, and VII provide information about intelligence, academic and pre-academic, speech and language, and visual perception and sensory motor tests, respectively. Chapter IX lists publishers and their addresses. (RH)

A Teacher's Thumbnail Guide to Standardized Tests in Early Childhood Education

A Manual to Acquaint Teachers with Formal Tests in Early Childhood

Early Childhood Special Education
Austin Independent School District

The Austin Early Childhood Special Education Program

A TEACHER'S THUMBNAIL GUIDE TO STANDARDIZED TESTS IN EARLY CHILDHOOD EDUCATION

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INTRODUCTION

The goals, difficulties, and process of diagnostic assessment are not clearly understood by many people, even those who must participate in the appraisal process. The persons requesting a diagnostic assessment on a child (parents, teachers, administrators, etc.) usually have different concerns and desires underlying their request. Each expects different information to be produced by the assessment process. These expectations tend to develop an overly simplistic view of assessment and the pupil appraisal process on the part of that particular person.

The purpose of "A Teacher's Thumbnail Guide to Standardized Tests In Early Childhood Education" is to provide a short, ready source of information about the process and problems of assessment. In addition, formal test instruments frequently used in the assessment process are listed by category, including a detailed discussion of the test and useful information the classroom teacher can gain from the results.

As this is written for persons not familiar with standardized tests and testing procedures, efforts have been made to keep terminology and "professional jargon" to a minimum. However, as the lay person must be familiar with professional terminology to understand psychological reports, professional terms will be introduced and defined either in context or in the glossary of terms. Directions for the use of the "Thumbnail Guide" are outlined on page 22 .

This effort is limited to the field of early childhood education and comments about the tests or procedures should be seen in that vein. The formal test instruments listed below were chosen for their apparent frequency of use in the field of early childhood education and inclusion in the list is not to be considered approval of the instrument by the authors or the sponsoring program.

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PROCESS AND PROBLEMS OF ASSESSMENT

The Goals of Assessment

There are two major goals of assessment: (1) to determine what, if any, handicapping condition or conditions exist that are interfering with the child's educational progress and/or personal development, and (2) to determine effective methods of overcoming or decreasing the difficulties caused by the handicapping condition. While the goals are clear, the process of reaching them can be time-consuming and difficult.

Difficulties in Early Childhood Assessment

In the field of Early Childhood Education, diagnostic assessment of children is more difficult than the assessment of older children. Until recently, there was a lack of diagnostic tests that were appropriate for preschool children. Now that test instruments are available, many are not considered highly reliable as they may require a child to manipulate materials and perform academic or pre-academic tasks that are totally unfamiliar to him. There is also the fact that for various reasons, young children may refuse to leave their parents for testing, refuse to perform on required tasks, or in other ways refuse to demonstrate their skills and abilities to a stranger.

The assessment of older children who have educational problems is usually carried out on specific academic tasks. The child who has reading problems is given a diagnostic reading test. There are still very few such diagnostic tests in the preschool age range that will yield an accurate assessment of the academic needs of a young child. After all, what is the academic curriculum of a three year old? Therefore, the instruments are usually constructed on a developmental basis, leaving the teacher to decide exactly what should be done in the classroom to correct the difficulties discovered.

Further difficulties are encountered when standardized tests require children to perform tasks they cannot perform, or tasks they perform poorly, due to one or more handicapping conditions. Most standardized tests were not designed with handicapped children in mind. This is especially true of intelligence tests. While it is obvious that a blind child

cannot perform adequately on a test requiring him to match pictures, other handicapping conditions not easily observed can prevent accurate test results without the examiner being aware of the problem. An unknown hearing loss can lower a child's score on a verbal test while the examiner believes it is an accurate score. Another example is a child who can hear well but cannot understand everything he hears (an auditory perception*problem). This child may not be able to demonstrate his true abilities because he only understands part of the task he is being asked to perform and stops before completing the task. These and other problems can be very difficult to recognize in preschool children.

The concept of the assessment team can be implemented to help overcome these and other problems involved in early childhood assessments.

The Assessment Team

When educational assessment is mentioned, the layman usually thinks of formal, standardized tests. While tests are quite useful, they are only one part of the assessment process. Classroom observation, actual physical examination and measurement of physical abilities, and long term information supplied through interviews with persons who know the child are very important. All yield important information not gained from many tests.

The educational assessment of a preschool child should be conducted on a continuing basis by a diagnostic team. No one person has the skills needed to perform a comprehensive, diagnostic evaluation nor can a comprehensive diagnostic evaluation be performed within a certain span of time and then discontinued. As the child progresses, the assessment process must continue to prevent information from becoming outdated. An ideal diagnostic assessment team is composed of the following members:

Physician: to assess physical health, physical abilites and/or disabilities, and determine the presence or absence of neurological involvement.
Audiologist: to determine hearing acuity*.
Vision specialist: to determine visual acuity* or other vision problems
Speech Pathologist: to determine receptive*/expressive* language skills and causes of any difficulties in speech and language not connected with auditory acuity.

*Technical Terms in Glossary 4

Parents: to supply pertinent historical data on the child's development, his current functioning in the home, and important information about the home that may bear directly on the child's difficulties.

Classroom Teacher: to supply information about the child's average daily performance on various tasks in the classroom and his demonstrated skills and abilities in the various areas of concern on a detailed, comprehensive basis.

Occupational Therapist: to determine presence or lack of sensori-motor* integration difficulties and possibly assess sensory perceptual* difficulties.

Educational Diagnostician or School Psychologist: to estimate the child's mental abilities, social/emotional status, possible processing deficits; to combine the information provided by the other team members into a practical, remedial program.

Under certain conditons, the assessment team may need other specialists such as a Physical Therapist, Pediatric Neurologist, Psychiatrist, etc. as various problems that require specialists are identified.

The team may never meet as a whole, but information from each of the team members is essential for a comprehensive assessment. The continuation of the assessment process on a long term basis is carried out by the Classroom Teacher, therapists working with the child, and the Educational Diagnostician or School Psychologist working on the case.

A Proposed Educational Assessment Schedule

While assessment efforts with young children are complex and time consuming, proper assessment of children is one of the most important steps of the educational process. First, eligibility and need for special services must be determined. Second, all educational planning must be based on the results of assessment processes to ensure an orderly progression from one stage of development to the next. As the person most closely associated with the child, the classroom teacher is in the best position to supply pertinent, reliable assessment data. Other assessment data generated by the assessment process is supplied by the support staff of the school program. Theproposed schedule as outlined below effectively

*Technical Terms in Glossary

deals with the difficulties in assessing and evaluating the needs of young children who have not been previously enrolled in public education programs.

Stage One: Referral (takes place before school placement)

Activity	Responsibility
Referral form completed	Support Staff **
Preliminary Screening performed	Support Staff
Registration packet given to parents if further evaluation is deemed necessary	Support Staff
Write for further information from other agencies, private school, hospitals, etc.	Support Staff

Stage Two: Diagnostic Classroom Placement

Week One: First five days of school

1. Informal observation of child	Classroom Teacher
2. Specific list of any behaviors of particular concern to the teacher	Classroom Teacher
3. Study folder or information available	Classroom Teacher
4. Assessment personnel begin to establish rapport with the child and perform classroom observation	Support Staff

Week Two: Second five days of school

1. Completion of second week of informal observation	Classroom Teacher
2. General unstructured observations of child's behaviors in the following settings:	Classroom Teacher & Support Staff
A. Free Play	
B. Small Groups	
C. Large Groups	
D. Playground	
E. Cafeteria	
F. Transition times	
3. Enumeration of any behaviors which are of concern to teachers or support staff	Classroom Teacher & Support Staff

**Support staff consists of: Speech Pathologist, Occupational Therapist, Educational Diagnostician, Associate Psychologist, Parent Coordinator , Project Supervisor

Activity	Responsibility
4. Rapport building between child and assessment personnel continued	Support Staff
5. Individualized informal assessment begins	Support Staff
6. First staffing of the child by all members of the program concerned with the assessment process. TENTATIVE CLASSROOM OBJECTIVES established for the child.	Classroom Teacher & Support Staff
Week Three: Third five days of school	
1. Formal classroom assessment checklist begun and completed.	Classroom Teacher
2. Standardized testing begins.	Support Staff
Week Four: Fourth five days of school	
1. Standardized testing continues	Support Staff
2. Staffing session to compare findings; identify further areas of pursuit or concern.	Classroom Teacher & Support Staff
Week Five: Fifth five days of school	
1. Standardized testing completed	Support Staff
2. Admission, Review and Dismissal Committee meets to formally review the child.	Support Staff & Classroom Teacher & Appropriate Others
3. If child is officially admitted to the program, Individualized Educational Program is formulated.	ARD Committee

General Responsibilities

1. The appraisal coordinator (Educational Diagnostician or School Psychologist) will ensure that by the end of the second day of the child's attendance, all persons concerned with the assessment of the child are notified in writing of the date their work is expected to be completed.
2. All personnel are responsible for meeting their deadlines.

This schedule should be considered a rough guideline to assessment procedures which can be modified as conditions warrant. When the number of children referred for assessment is small, it can usually be followed very closely. If the number of children referred at any one time exceeds the capacity

of the staff to perform their functions, priorities will have to be established and the schedule modified.

However, after four years of serving preschool children who are referred from various sources for special education, the Austin Early Childhood Special Education Program has found the above schedule to be the most adequate and effective in meeting the needs of the children within the constraints of time and the number of personnel involved.

TEST SCORES AND WHAT THEY MEAN

There are many types of test scores that can be reported from testing results: too many to be discussed fully here. Therefore, only the major types of scores usually reported to teachers will be discussed. This section is not a crash course in statistics or test construction, but some basic information must be covered if test scores and their implications are to be understood.

Test Construction Simplified (Reliability and Validity)

When an individual constructs a standardized test, there are three major considerations that must be kept in mind: (1) the reliability of the test, (2) the validity of the test, and (3) the sample population on which the test will be normed. These three items determine the confidence a user can place in the scores obtained from the test.

Reliability. Reliability is the term used to describe how stable test scores will be over a period of time. If a subject scores a 95 on a test on Monday and then scores a 42 on the same test on Friday, the test in not reliable. The user cannot be confident that a subject's score accurately reflects his ability in the area measured by the test. While a subject's scores on a test given more than once may never be exactly the same, they should all be within a narrow range of scores if the test is reliable.

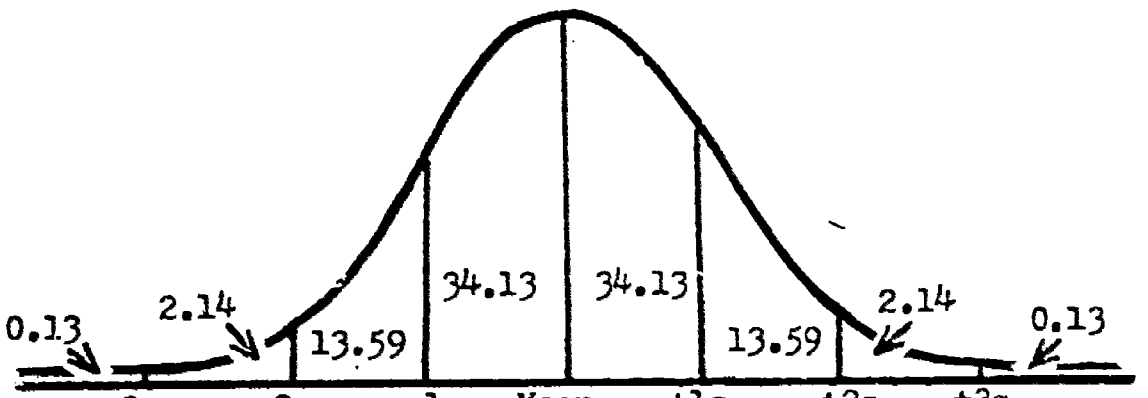
Validity. Validity is the degree to which a test user knows what a test actually measures or predicts. "Does the test actually measure what it is supposed to measure?" This is the key question when discussing validity.

Sample population. Standardized tests are used to compare an individual's ability in the areas measured with that of other individuals: Where does the person rank when compared to others? Essentially, standardized test norms represent the performance of the group of people used to standardize the test. This group may be referred to as the sample population, standardization sample, or the norm group.

A sample population is chosen to take the test. If the persons in this sample population are chosen appropriately, they will form a miniature version of the entire population.

In the case of an IQ test to be used in the United States, the sample population should represent a minature version of our society. Therefore, their scores on the test, arranged from lowest to highest, will approximate the range of scores from lowest to highest that would be obtained if everyone in the country took the test: some will score very low, most will score in the middle, and some will score very high. Figure 1 represents this type of population and represents what is called a normal distribution or a normal curve. The height of the curve above the line indicates the proportion of scores that fall on that area of the line.

FIGURE 1: Percentage of cases under portions of the normal curve



Cumulative Percentages	0.1%	2.3%	15.9%	50%	84.1%	97.7%	99.9%

A person who takes the test at a later date will have his score compared to those of the sample population. It is then assumed that this comparison will approximate a comparison of his score with how everyone else in the nation would score if they all took the test.

Opinion poll takers who predict the outcome of political elections use the same method. They question a carefully selected group of people, the sample population, and predict how the unquestioned people will vote.

As no sample population truly represents the total population, the poll takers are never totally accurate. It should be remembered when using test results that the individual's performance is being compared to the sample population, not the entire population. Therefore, the scores obtained will not be totally accurate, but will be very close if the sample population was chosen appropriately.

One of the major failings of standardized tests has been the lack of representation of minority groups and persons from deprived or low socio-economic backgrounds. Also, handicapped persons are not usually represented in the sample population. Therefore, when interpreting scores for these test subjects, the test user should use caution as the results of the test are being compared to scores in a sample population that does not adequately represent this particular group of people. Newer tests and more recent revisions of older standardized tests are attempting to remedy this problem but efforts in this area are slow.

Measures of Central Tendency

Measures of central tendency indicate the typical score within a range of scores. The three scores used to measure central tendency are the mean, median, and mode.

Mode: the most frequently appearing score on a test.
Median: the middle score of a list of scores; the 50th percentile
Mean: the mathmatical average score obtained by adding all the test scores together and dividing by the number of scores that were added.

Example:

Test Scores	
3	
7	
9	← Mode
9	
12	← Median (middle score between lowest and highest score)
14	
15	
23	
25	
Total 117	

$$\text{Mean} = \frac{\text{total of scores added}}{\text{number of scores added}}$$

$$\text{Mean} = \frac{117}{9} = 13$$

However, these scores cannot be used to compare different subjects' abilities other than on this one test.

Age Score. Age scores are used to indicate the average performance of individuals at each age. To say that a child has a mental age (or language age) equivalent of 4-0 (4 years, 0 months) is to say that his score in the area tested is like the score of the average four year old.

This type of score is useful only with children where abilities show a clear change with age. To say that a child 5-0 years old has a language equivalent of 3-0 years gives a relatively clear and descriptive picture of his abilities. To say that an 18-0 year old has a mental age of 20-0 years does not convey any clear picture of his abilities, for mental abilities are relatively fixed by age 18 and it is thus highly doubtful that they would vary between age 18 and age 20.

Grade Equivalents: Grade equivalents are determined by administering a test to a sample population and then determining the average score of children at each grade level. If the average second grader correctly solves 20 problems, the raw score of 20 will correspond to a grade equivalent of 2.0. As school usually lasts 10 months, scores are given as decimals: 2.0 = beginning second grade, 2.5 = middle of second grade, 2.9 = end of second grade.

It is easy to misinterpret grade equivalent scores. A second grader scoring a grade equivalent of 4.9 on arithmetic does NOT mean that he can perform all the arithmetic calculations taught in the fourth grade. While it is not totally accurate, a better interpretation of this score would be that he performs much like a fourth grader would perform on a second grade math test.

Stanines and percentiles will give a more accurate picture of the child's abilities when he is compared to other children at his grade level.

Standard Scores

For test scores to be useful, a person's raw score--the actual number of problems correctly solved--must be converted statistically to a derived score. Derived scores serve two purposes: (1) they indicate a person's relative standing in relationship to the sample population thereby permitting his performance to be compared to the performance of otherswho have taken the test, and (2) they provide a method to compare a person's performance on two or more different tests.

Standard deviation. Standard deviation (s = standard deviation) is a statistical score that is used to indicate how far scores vary from the mean score of a test. It provides a method to relate a person's score on different tests by the use of norms.

On a normal distribution, the proportion of scores falling under the curve is in direct relationship to standard deviation. For example, Figure 1: 34.13% of the scores on a test will fall between the mean and +1s. The opposite is also true, 34.13% of the scores on a test will fall between the mean and -1s. Therefore, 68.26% of all test scores fall between -1s and +1s. Nearly all test scores (99.72%) will fall between -3s and +3s.

It should be noted that the standard deviation may change from test to test, but the proportion of scores within each standard deviation always remains the same. For example: the standard deviation on test A may be 12 points with a mean of 100 points. To score +1s above the mean, a person must score 112. On test B, the standard deviation may be 24 with a mean of 100. To score +1s above the mean a person must score 124. However, on both tests, only 34.13% of the people taking the test will score between the mean and +1s.

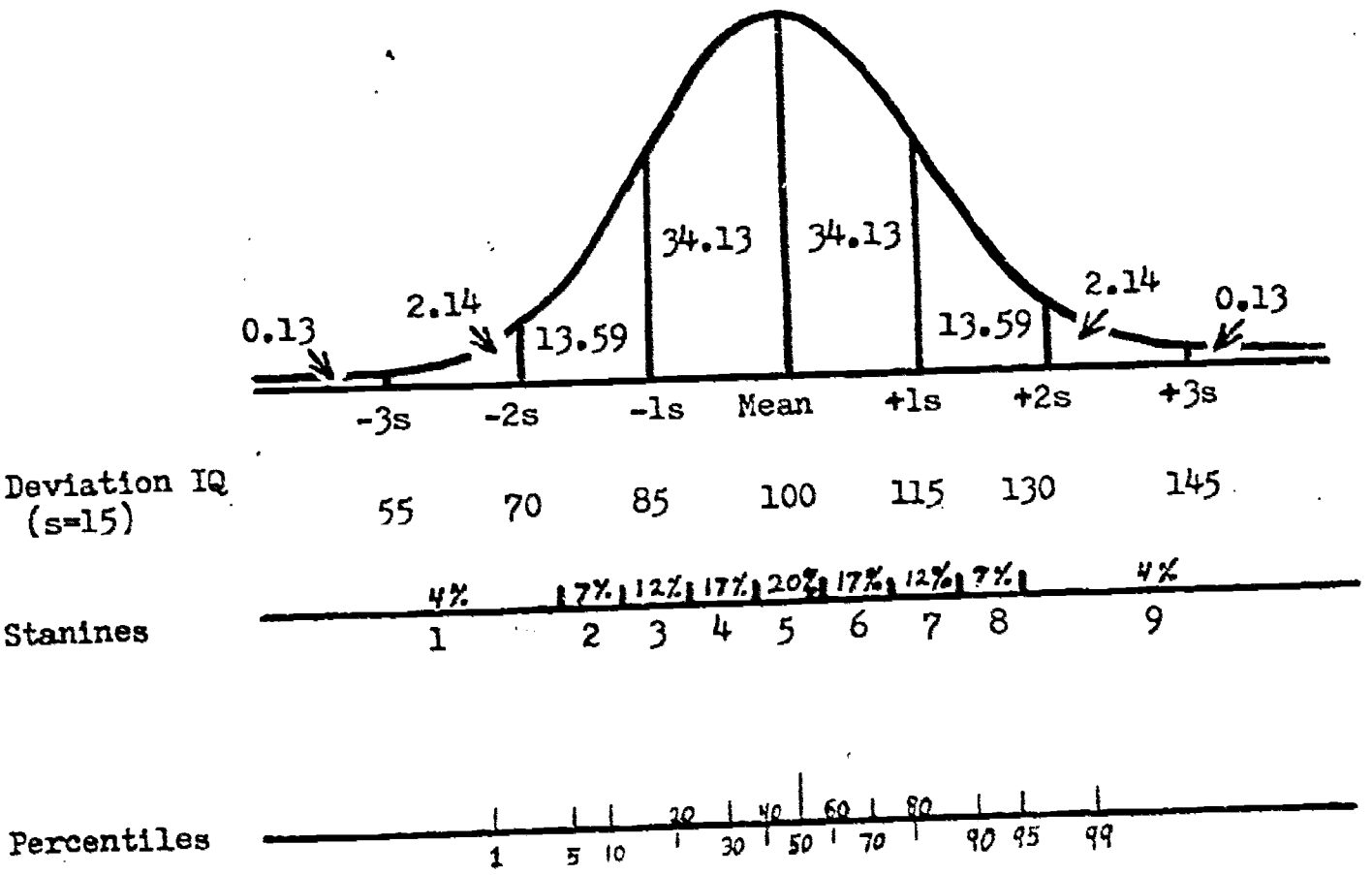
With no point of comparison, it could appear that a score of 124 on test B is better than a score of 112 on test A. However, through the use of standard deviations, it can be seen that it takes just as much effort and ability to score 112 on test A as it does to score 124 on test B. Standard deviations provide a method to compare scores on different tests although the difficulty level of the tests may differ.

Standard deviations are also used as points of significant difference. There is a significant difference in the scores, and thus the ability levels, of a person who scores at the mean of a test and a person who scores one or more standard deviations above or below the mean. There is also a significant difference between the scores of a person who scores at +1s and a person who scores at +2s.

Percentile Rank. Percentile ranks indicate an individual's rank on a test by indicating the percentage of the sample population whose scores fall below his particular score. If a person's score falls at the 73rd percentile rank, this indicates that 73% of the sample population scored

below him. Percentile ranks tend to cluster near the median of a normal distribution of test scores as can be seen in Figure 2.

FIGURE 2: Relationships between different scores in a Normal Distribution.



While percentile ranks report each person's position in relationship to the other persons in the sample population, they don't indicate the amount of difference between scores. Figure 2 shows that the difference from the mean to +1s is 34 points (84-50) while the difference between +1s and +2s is only 14 points (98-84). One cannot compare how much better a person must perform to rank at the 50th percentile instead of the 49th percentile. Also the difference in performance to raise a score from the 49th to 50th percentile will not be equal to the difference in performance required to raise a score from the 90th to the 91st percentile.

Stanine. This is a standard score that ranges between a low of 1 and a high of 9. The mean score is 5. Scores of 4, 5, and 6 are considered to be within the average range. Figure 2 indicates the per cent of scores in a normal distribution that fall within each stanine.

IQ Scores. Most I.Q. scores are based on a mean of 100. The standard deviation may be different between tests, but many have a standard deviation of 15 points. Therefore, as can be seen by Figure 1, 68.26% of the population of the United States will score between IQ 85 and IQ 115. (± 1s from the mean) and 95.44% of the population will score between IQ 70 and 130 (± 2s).

While different tests may use slightly different classifications for different IQ scores, the following classifications are common:

IQ	Classification
130 and above	Very Superior
120 to 129	Superior
110 to 119	High Average
90 to 109	Average
80 to 89	Low Average
70 to 79	Borderline
69 and below	Mentally Deficient or Mentally Defective

(Wechsler, 1974: p. 26)

In the range of mental retardation, there are different degrees of severity. The classification of these different levels differs among various groups of professionals and the classroom teacher should be familiar with the terminology used.

IQ	American Educators	American Psychiatric Association	American Physicians
70 to 79	Borderline	Borderline	Mentally Deficient
55 to 69	Educable	Mild	Moron
40 to 54	Trainable	Moderate	Imbecile
25 to 39	Custodial	Severe	Idiot
Below 25		Profound	

The educably retarded child may, at best, be able to achieve an academic performance of about the 6th grade level by the time he is in his teen years. The trainable child at

best may be able to attain an academic performance level of between the 2nd and 3rd grade with a long period of training. The severely retarded person may achieve basic self-help skills and the profoundly retarded person may achieve limited self-help skills with long periods of training.

It is very important to note that mental retardation cannot be identified by IQ scores alone. The IQ score must be accompanied by below average adaptive behavior before a person can be identified as mentally retarded. Adaptive behavior includes those social skills, self-help skills, and other developmental skills that an individual must master to function adequately in society. Therefore, if a person functions adequately in society, a low IQ score alone is not sufficient to identify him as mentally retarded.

Test Scores and Classroom Performance

A child's scores on standardized tests may not reflect his actual performance in the classroom on a daily basis. If a teacher believes that any test score is not an accurate indication of a child's ability, that it is either too high or too low, she should immediately call this to the attention of the examiner. Controversy such as this can lead to further clarification of a child's problems through further assessment.

STANDARDIZED TEST FREQUENTLY USED

IN EARLY CHILDHOOD ASSESSMENT

The Nature of Standardized Tests

Psychological tests are called "standardized" tests as they are an objective and standardized method of measuring behaviors. The term "psychological test" is frequently misunderstood; most laymen believing the term to be limited to measures of intelligence and emotional behavior. Psychological tests cover a broad range of nonintellectual measures including separate abilities such as language tests, sensori-motor tests, and achievement tests. The term "standardized test" will be used in an attempt to avoid this confusion.

To qualify for the term "standardized," a test must meet certain requirements. The methods of administering and scoring the test must be uniform. Conditions under which the test is administered must be controlled so everyone takes the test under similar conditions. Other conditions discussed under "Test Scores and What They Mean" must also be met. If all test examiners administer the test in the same manner, under the same conditions, and score the test in the same way, the only difference between test scores should be the ability of the persons taking the test.

Teachers should be familiar with the tests used with the children they teach. However, teachers must exercise professionalism along with their knowledge. Teaching a child the appropriate responses to actual items on a standardized test invalidates the results of the test and does the child a disservice. Teaching a child the answers to an IQ test or an arithmetic achievement test does not raise his intelligence, or arithmetic achievement level, it simply raises his score. The results of this type of teaching can result in the child being required to perform tasks far beyond his ability creating frustration for both the child and the teacher who believes his level of performance should match his test score.

The examples of test items used for the tests listed below are not actual questions from the tests themselves. They are very similar to actual test questions and indicate what the child is required to do.

How to Use the Information

Communication is the key to a good assessment program at all ages. All persons on the assessment team must be relatively familiar with the assessment instruments used by other members of the team and be able to understand the results obtained from the instruments. The information provided below will enable a classroom teacher to become familiar with frequently used standardized tests. An effort was made to indicate what skills or abilities the test measures, how the skills are measured, and what information can be obtained from the test that will be of practical use to the classroom teacher.

Three points should be remembered. First, tests measure very few of the total skills, abilities and behaviors a child is capable of performing. Much of the information resulting from testing will already be known to the teacher through classroom observation of the child. Second, the reliability and usefulness of testing results depends a great deal upon the qualifications of the examiner. An experienced examiner will usually be able to obtain more information that is useful to a classroom teacher than an inexperienced examiner. Third, the amount of information gained from testing that will be directly useful to the teacher for planning lessons depends upon the examiner's knowledge of exactly what the teacher desires to know. Teachers should be sure to explain in detail their concerns about the child: exactly what areas, skills, and abilities they want tested or evaluated.

The following information can be used in two ways. If the teacher knows what tests the examiner plans to use before testing begins, she can read about the test and indicate what formal or informal information the test will provide that she is concerned about. If she indicates these concerns to the examiner before testing, the examiner will be more likely to observe the child's behavior in these areas and return with useful information.

The other method of using the information is to read about the tests administered after testing has been completed. In this way, the teacher can request information that can be obtained from the test or during the testing session which an examiner may not feel important enough to report, but which the teacher feels is very important.

Information Provided About the Tests

An attempt was made to provide information about tests in a standard format. Due to the nature of some of the tests reviewed, this was not completely possible. However, most of the tests are reviewed in the following format:

NAME OF THE TEST (INITIALS OF THE TEST COMMONLY USED)
Author (s):
Publisher:
Diagnostic: (1) can the test be used to identify relative strengths and weaknesses in the child's development in the areas the test measures, or (2) can the results of testing be used to plan remediation programs?
Scores Obtained: the standard or normative scores the test yields.
Ages: the age range within which the test can be used. 5-0 is used to indicate "five years, zero months".
Administration: indicates whether the test is a group or individually administered instrument, the qualifications needed by the examiner, the approximate time it takes to administer the test.
Child Performance: what must the child do to perform the tasks required by the test: hear, speak, use paper/pencil, see, manipulate materials, etc.
Test Description: a short description of the tasks required by the test. Examples given are similar but not identical to actual test items.
Comments: comments about the test gained from experience or use. This is sometimes omitted.
Classroom Information: (1) Information gained from the test that will be directly useful to the classroom teacher for lesson planning or remedial teaching program. (2) The type of classroom or daily living tasks that will be affected by a problem in the area measured by the test. Observations of difficulties in these areas by classroom teachers can be used for referral to specialists for testing and should be specified as the reason or reasons for referral.

It is always recommended that the classroom teacher discuss this information with the examiner both before and after testing.

Note:

All individually administered tests will provide insight on the child's attention span, ability to relate to materials, ability to relate to adults, persistance with difficult tasks, reaction to failure and success, self-confidence, and other individual traits. These traits will not be listed separately for the tests reviewed.

The tests reviewed fall into four categories: (1) Intelligence Tests, (2) Speech and Language Tests, (3) Academic and Pre-Academic Tests, and (4) Visual Perception and Sensori-Motor Tests. A fifth area, measures of social and/or adaptive behavior, was not reviewed due to the lack of a commonly used standardized instrument considered suitable for the early childhood age range. This is an extremely important area of assessment and suitable instruments should be available in the near future.

The tests below were chosen for review by the apparent frequency of use in the field of Early Childhood Special Education and inclusion in the list is not to be considered approval or recommendation of the test instrument by the authors or the sponsoring program.

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BAYLEY SCALES OF INFANT DEVELOPMENT (BAYLEY)

Author: N. Bayley

Publisher: The Psychological Corporation

Diagnostic: Yes

Scores Obtained: Mental Scale Score; Motor Scale Score; Infant Behavior Record

Ages: Birth to 2-6 years

Administration: This test should be administered by a trained examiner in an individual setting. Administration time is approximately one hour. Some items can be observed rather than tested.

Child Performance: The child must be able to hear, see, vocalize, verbalize, and perform motorically to perform for this instrument.

Test Description: The Mental Scale measures sensory-perceptual acuities* and discriminations; early acquisition of object constancy and memory; learning and problem solving ability; the beginning of verbal communication; and early indications of the ability to generalize and form classifications.

The Motor Scale measures the degree of control of the body and coordination of large and small muscles such as balance and manual dexterity.

The Infant Behavior Record is completed from the examiner's observations. It deals with social orientation, emotional variables, how the child relates to objects, the child's motivation for specific actions, level of activity and reactivity to stimuli, and areas of sensory interest such as sounds or visual cues.

Comments: This test is very good for infants and for older children who are functioning between the ages included in the test. For this reason, the Bayley is becoming more popular in the assessment of severely and profoundly handicapped children of all ages.

*Technical Terms in Glossary

Classroom Information: By direct questioning of the examiner, the teacher can obtain specific information about the child's strengths or weaknesses in the areas of: perceptual skills, gross and fine motor skills, receptive* and expressive* language abilities, social/emotional development, self-help skills, and cognitive abilities.

COLUMBIA MENTAL MATURITY SCALE (CMMS or Columbia)

Authors: B. Burgemeister, L.H. Blum, I. Lorge

Publisher: Harcourt, Brace, Jovanovick

Diagnostic: No: the test was designed to yield an I.Q. estimate, not to detect strengths or weaknesses.

Scores Obtained: Age Deviation Score (can be considered equivalent to an I.Q. score), Percentile Rank, Stanine, and Maturity Index.

Ages: 3-0 years to 10-0 years

Administration: The test should be administered in an individual setting with an examiner who is familiar with the use of formal measures. Administration has no time limit, but usually takes from 15 to 30 minutes.

Child Performance: The child must be able to hear and understand verbal directions to take the test. Verbal responses are not required, but the child must be able to point to the response of his choice. Adequate vision for medium sized pictures and fine details is required.

Test Description: Three to five pictures, some in color, appear on a 6 by 19 inch ard. The child is required to indicate which item appearing on the card does not belong with the other items shown. Pictures are relatively large, but some contain fine details requiring adequate vision and good visual perception* on the part of the child. The visual representations of the concept of "same and different" range from the concrete to the abstract.

* Technical terms in glossary

Intelligence Tests
CMMS (Cont.)

Comments: This test can be used with children who are speech impaired due to the motoric response mode. Children with impaired motor functioning can frequently respond better on this instrument than other non-verbal instruments due to the relatively large size of pictures and the spacing between the pictures which make it somewhat easier for the motor impaired child to clearly indicate his response choice. The CMMS appears to measure the child's ability to internally manipulate visual abstract concepts.

Classroom Information: Gaining information for use in remedial activities in the classroom from the CMMS is difficult and time consuming. By observing each item passed or failed by the child, some indication of the following skills can be obtained: Visual discrimination* of color, size and shape; visual perception* of spatial relationships*; classification skills on a concrete or abstract basis.

HISKEY-NEBRASKA TEST OF LEARNING APTITUDE (HISKEY)

Author: M.S. Hiskey

Publisher: Union College Press, Lincoln, Nebraska

Diagnostic: Yes

Scores Obtained: Learning Age and Learning Quotient for deaf children; Mental Age and Deviation I.Q. score for hearing children.

Ages: 3-0 to 17-0 years

Administration: This test should be administered in an individual setting by a highly trained examiner. Administration time is approximately one hour.

Child Performance: This test was designed to be used with deaf children but can be used with hearing children. The child must be able to see fine detail in pictures and to manipulate both two and three-dimensional materials.

*Technical Terms in Glossary

Intelligence Tests
Hiskey (Cont.)

Test Description: The child is required to perform such tasks as matching bead and block patterns from direct examples, pictures, and then from memory. Folding paper into specific patterns is required as are visual memory tasks such as remembering a series of pictures or a series of printed digits. Concrete and abstract visual association tasks are also presented.

The Learning Aptitude score should not be confused with an I.Q. score. It corresponds much more closely to a mental age score. A Learning Aptitude score of 5-0 means that the child can perform the tasks which the average 5-0 year old deaf child can perform, or that he should be able to perform those tasks with the same average efficiency as the average five year old deaf child.

Comments: It appears that some of the subtests on this instrument could be used to gain further information about a child's visual abilities and skills that are tested on the Illinois Test of Psycholinguistic Abilities. Some of the subtests will be difficult for children with fine motor difficulties, especially those closely timed.

Classroom Information:

Subtest:

Bead Patterns: bilateral integration*, fine motor coordination, pincer grasp and release, ability to copy a 3-dimensional pattern, visual memory* for 3-dimensional patterns.

Memory for Color: Ability to match colors, ability to remember from one to six colors and match them, ability to self-correct mistakes.

Picture Identification: ability to match identical pictures; attention to details in pictures.

Picture Association: visual classification of concrete and abstract relationships.

Paper Folding: ability to fold paper into simple and complicated designs; fine motor coordination; bilateral integration*; ability to follow concrete demonstrations in sequence.

Visual Attention Span: ability to remember visual stimuli presented either singly or groups; attention to details in pictures.

*Technical terms in glossary

Intelligence Tests
Hiskey (Cont.)

Block Patterns: ability to recognize three dimensions in pictures and translate the picture to a three-dimensional pattern; fine motor coordination; spatial orientation*.

Completion of Drawings: paper/pencil skills; ability to recognize missing parts of figures when shown full figure.

Memory of Digits: not administered to early childhood children

Puzzle Blocks: not administered to early childhood children

Picture Analogies: not administered to early childhood children.

Spatial reasoning: not administered to early childhood children.

LEITER INTERNATIONAL PERFORMANCE SCALE (LEITER)

Author: R. G. Leiter

Publisher: Western Psychological Services

Diagnostic: Some diagnostic use can be made of the results, but the interpretation of the child's performance takes a well trained examiner and a great deal of time and effort.

Scores Obtained: Mental Age: Ratio I.Q. score

Ages: 2-0 to 18-0 years

Administration: This test should be administered in an individual setting by a trained examiner. Administration time is approximately one hour although there is no time limit for any of the items on the test.

Child Performance: The child is required to manipulate small blocks thathave a visual stimulus on one side into a series of square slots designed to hold the blocks. No verbal directions are necessary and the

*Technical terms in glossary

child does not have to respond verbally at any time. The child must have good visual acuity as pictures are small and detailed. A motor impaired child is not penalized as none of the items in the preschool range are timed. If the child has extreme difficulty placing block in the slot, the examiner may help in this task IF the examiner is POSITIVE he not only knows which slot the child is trying to place the block in, but also the spatial orientation* of the block being placed.

Test Description and Classroom Information: This is a non-verbal psychological instrument that has been normed on an international basis.

The following conceptual areas are purportedly measured:

Subtest	Classroom Information
Figure Ground Discrimination*	Ability to see details in pictures; letters in words, words in sentences, etc.
Object Recognition	Ability to recognize objects that are identical; recognize objects by use.
Spatial Relations*	Coordination of child.
Visual Discrimination*	Ability to discriminate colors, shapes, sizes, designs.
Visual Closure*	Ability to complete partial pictures visually; ability to recognize objects when only part of the object is seen.
Perceptual Constancy*	Ability to match items on various aspects regardless of other variables: to match squares regardless of size, match colored blocks regardless of shape, etc.

*Technical terms in glossary

Intelligence Tests
LEITER (Cont.)

Subtest	Classroom Information
Perception of Position*	Ability to reach for an object in the correct spatial orientation from the observer, to pick up a cup for example.
Perception of Spatial Relationships*	Ability to arrange items in correct spatial orientation with each other (all triangles with single point upwards) or in relation to the observer.
Classification	Ability to group objects by concrete or abstract associations (eg. by shape, color, use, etc.)
Number Concepts	Measuring and pairing; counting up to the number four; matching sets of items.
Sequencing	Ability to sequence items from smaller to larger; also complete patterns only partially demonstrated.
Similarities	Ability to detect concrete or abstract relationships between items on a visual basis: apples with oranges, cars with bicycles, etc.
Visual Association*	Concrete and abstract association
Visual Sequential Memory*	No direct classroom information from test.

*Technical Terms in Glossary

LEITER (Cont.)

Comments: While the above concepts are measured, not all carry over to direct information a classroom teacher can use due to the nature of the testing. Other information that can aid the teacher and can be observed by the examiner is: fine motor coordination, bilateral integration, sex identification of male and female.

In attempting to use the test results on a diagnostic basis, the major problem is that more than one of the above concepts is measured in each task; usually three or more concepts are contained in each task. Therefore, the examiner must attempt to determine just why the child has difficulty with a specific item when he did not have difficulty with another item very close in nature. This is very difficult for even the most experienced examiner.

McCARTHY SCALES OF CHILDREN'S ABILITIES (McCARTHY)

Author: D. McCarthy

Publisher: The Psychological Corporation

Diagnostic: Yes

Scores Obtained: Verbal Scale Score; Perceptual-Performance Scale Score; Quantitative Scale Score; General Cognitive Index (corresponds to the I.Q. score of other tests) which is composed of the Verbal, Perceptual-Performance, and Quantitative Scores; Memory Scale Score; and Motor Scale Score.

Ages: 2-6 to 8-6 years

Administration: This test should be administered in an individual setting by a trained examiner. Administration time is approximately one hour.

Child Performance: On the verbal scale, the child is required to respond with single words, phrases, and sentences. On the performance tasks, the child is not required to respond verbally, but by manipulating objects. However, he must be able to understand oral directions given by the examiner. Vision must be adequate to respond to fairly detailed pictures.

*Technical Terms in Glossary

Test Description: The test is composed of a series of subtests for each of the scale scores mentioned above. On the Verbal Scale, the child's ability to express himself verbally and the maturity of his verbal concepts are measured. On Perceptual-Performance tasks, the child's motor skills are measured along with his ability to perceive pictures and three-dimensional objects accurately. The Quantitative Scale attempts to measure the child's aptitude for numbers and his understanding of quantitative words rather than the exact level of his computational skills. The Motor Scale assesses both fine and gross motor tasks. Measures of eye and hand dominance are also included.

Comments: This a rather new instrument, but appears to be gaining favor with examiners working in the field of early childhood education.

Classroom Information:

Visual: Visual gestalt*, visual memory*, eye-hand coordination*, visual-motor integration*, visual perception of spatial orientation*.

Motor: Pincer grasp and release; manipulation of thin materials; pointing response; balance; gross motor coordination; bilateral coordination*; lateral dominance*; ability to imitate actions and postures; pencil grasp.

Verbal: Receptive vocabulary and auditory perception*; expressive vocabulary; verbal fluency*; auditory memory for: (a) unrelated words, (b) sentences, (c) relating a sequence of events, (d) number sequences.

Cognitive: Left-right knowledge; one to one correspondence in counting; classification of: (a) color, (b) shape, (c) size and (d) combination of color, shape, and size on concrete and abstract levels: abstract vs. concrete reasoning.

MERRILL-PALMER SCALE OF MENTAL TESTS (MERRILL-PALMER)

Author: R. Stutsman

Publisher: Western Psychological Services

*Technical Terms in Glossary

Intelligence Tests
Merrill-Palmer (Cont.)

Diagnostic: Yes

Scores Obtained: Mental Age; Deviation scores from the mean

Ages: 18 months to 6-0 years

Administration: This test should be administered in an individual setting by a trained examiner. Administration time is approximately 30 minutes to one hour.

Child Performance: The child is required to manipulate buttons, blocks, paper and pencil, and puzzles. His vision should be adequate for these tasks. The child should be able to understand the directions given orally by the examiner. Verbal responses are required as follows: repetition of single words, repetition of phrases, single word responses to questions.

Test Description: The test is composed of a series of tasks that are mostly performance in nature. Large items and pictures are used and many items are very colorful to attract attention. Many of the tasks required are highly speeded; the child receives credit at higher age levels for quicker performances.

Comments: This is an excellent instrument to use with very young children and children who do not speak. Most tasks are interesting and there is a method of scoring the test even if the child refuses to perform on some items. While verbal items are present, the test is heavily non-verbal in nature. Therefore, the Mental Age derived from the child's performance is usually higher than Mental Age scores obtained from instruments that have more verbal items included. Children with fine motor coordination problems or who work slowly will be penalized due to the close timing of the child's performance on each task.

Classroom Information: By questioning the examiner the classroom teacher can obtain information concerning the child's abilities in the following areas: fine motor manipulative skills; paper/pencil skills; 3-dimensional geometric shape discrimination; color matching; eye-hand coordination; matching identical shapes; pincer grasp and release; bilateral hand coordination and figure ground discrimination*; ability to learn from experience.

*Technical Terms in Glossary

PEABODY PICTURE VOCABULARY TEST (PPVT)

Author: L. M. Dunn

Publisher: American Guidance Service

Diagnostic: No

Scores Obtained: I.Q. Score; Mental Age; Percentile Rank

Ages: 2-6 to 18 years

Administration: This test should be administered in an individual setting. The examiner does not have to be highly trained. Administration time is approximately 10 to 15 minutes.

Child Performance: The child is required to listen to a cue word and then point to a picture he feels represents the cue word. He must have adequate hearing and auditory perception* to correctly hear and understand the cue word. Adequate vision to see medium sized pictures and good coordination to point to one of four pictures on a page are also required.

Test Description: The test consists of four pictures on a page from which the child must determine which picture most closely corresponds to a cue word given by the examiner. Items range from simple nouns to highly abstract verbs and concepts.

Comments: This test is usually used for a quick screening of referred children. In the early childhood age range, the Mental Age might be considered more appropriately as a measure of the child's single word receptive vocabulary ability rather than a predictor of future or current performance capabilities in any other area.

Classroom Information: Basically, no information for classroom planning can be obtained from this instrument other than the child's basic ability to relate to adults, pictures, and ability to point accurately.

*Technical Terms in Glossary

Intelligence Tests

STANFORD-BINET INTELLIGENCE SCALE (FORM L-M) (BINET)

Authors: L. Terman and M. Merrill

Publisher: Houghton-Mifflin

Diagnostic: Yes

Scores Obtained: I.Q. Score; Mental Age

Ages: 2-0 to 22-0 years

Administration: This instrument should be administered in an individual setting by a trained examiner. Administration time is approximately one hour.

Child Performance: The child is required to understand oral directions from the examiner. Expressive language is also required to respond to many of the items. Fine motor responses are required for items such as bead stringing, pointing, and paper/pencil manipulation, etc. Adequate vision is required for small, detailed pictures.

Test Description: The Stanford-Binet consists of six subtests, or tasks that are administered at half-year intervals up to the age of five years. From five years to fourteen years of age, there are six subtests administered yearly: above this level there are four subtests per year level. Each testing interval has an alternate test to be administered if something goes wrong when testing with one of the usual tasks at that age level. The subtests vary greatly in what is required at each testing level. At the younger levels, tasks are usually interesting for the children. To obtain a score, the child must correctly complete all the tasks at one level (a basal level) and is then tested until he fails all the tasks at a higher level (a ceiling level).

Comments: This is a highly respected test and frequently used with young children. The major problem, from a psychological point of view, is that it may not be possible to obtain a score on a child if he has problems that interfere with his performance such as poor vision, lack of receptive or expressive language, or impaired motor skills.

*Technical Terms in Glossary

Intelligence Tests
Binet (Cont.)

Classroom Information: By questioning the examiner, the teacher can gain insight into the child's strengths and weaknesses in the areas below. The child's strengths and weaknesses can be compared to other children his own age or his own performance can be compared between each of the areas listed.

General Comprehension: Ability to conceptualize and integrate components into a meaningful total relationship.

Task: At the preschool levels, the child is required to perform various tasks. Some examples are: identify parts of the body; identify objects by name or by use; obey simple commands and respond to general comprehension questions.

Classroom Information: auditory perception*, visual perception*, long term memory; word retrieval ability*.

Visual-Motor Ability: ability to manipulate materials in problem solving situations, usually requiring integration of visual and motor abilities.

Task: Manipulate pieces of a form board; build block designs; string beads; complete simple puzzles; and draw geometric shapes with paper and pencil.

Classroom Information: pincer grasp and release, visual perception of 3-dimensional space; bilateral integration*; visual gestalt*; paper/pencil skills.

Arithmetic Reasoning: Ability to make appropriate numerical associations and deal with mental abstractions in problem solving situations.

Task: This is not tested until the Year VI level where the child is required to count objects with one-to-one correspondence.

Classroom Information: Visual perception*; numerical one-to-one correspondence in counting; addition and subtraction skills.

Memory & Concentration: Ability to retain, requiring motivation as well as attention.

Task: The child is required to perform such tasks as repeating digits, remember and indicate under which shell a pea has been hidden, remember pictures of objects and pick out the objects when shown a page of pictures.

Classroom Information: Immediate auditory and visual memory*; word retrieval ability*

*Technical Terms in Glossary

Vocabulary & Verbal Fluency: Ability to correctly use words in association with concrete or abstract materials; understanding of words and verbal concepts; quality and quantity of verbal expression.

Task: The child is required to name pictures; identify objects by name; tell a story about, or name items in fairly detailed pictures.

Classroom Information: Word retrieval ability*; imagination; verbal expression skills; abstract vs. concrete reasoning ability in verbal and visual tasks.

WECHSLER INTELLIGENCE SCALE FOR CHILDREN - Revised (WISC-R) (1974) WECHSLER PRESCHOOL AND PRIMARY SCALE OF INTELLIGENCE (WPPSI) (1973)

Author: David Wechsler

Publisher: The Psychological Corporation

Diagnostic: Yes

Scores Obtained: Verbal Scale I.Q. Score; Performance Scale I.Q. Score; Full Scale I.Q. Score; scale scores for each subtest.

Ages: WPPSI -- 3-11 years to 6-6 years
WISC-R -- 6-0 to 16-11 years

Administration: These instruments should be administered in an individual setting by a trained examiner. Administration time is approximately one hour for each instrument.

Child Performance: The Wechsler Scales are divided into a verbal section on which the child must be able to respond verbally to various questions and a performance section which does not require the child to respond verbally, but does require him to be able to understand oral directions. For the child to perform on the non-verbal tasks, he must have adequate vision, fine motor manipulative skills, and paper/pencil skills.

Description of the Test: The Wechsler scales are divided into six verbal and six non-verbal subtests. Only five of each type are used to determine the I.Q. scores that

*Technical terms in Glossary

are obtained from testing. One test on each scale is an alternate that is to be used if something goes wrong while testing on one of the usually-administered subtests or to be used to obtain more information about the child.

Below is a description of the subtests, the formal information that each yields, and information that can be obtained that would be of use to the classroom teacher.

Comments: Experience has shown that the WPPSI is usually not an effective test with preschool children who are suspected of being trainably mentally retarded. Trainably retarded preschool children frequently cannot successfully perform any of the tasks on one or more of the subtests. While this indicates what the child cannot do it does not indicate what the child can do. Learning at what level of difficulty a child can perform tasks is much more useful than learning he cannot succeed on the specific items appearing on the test.

Verbal Scale

Information: (WISC-R & WPPSI) Reflects alertness and interest; measures long term information; is influenced by cultural background.

Task: The child is required to answer factual questions. Examples: "What flies?" "What are shirts made of?"

Classroom Information: Ability to express ideas; ability to recall specific words under stress (word retrieval ability); general level of knowledge.

Similarities: (WISC-R & WPPSI) Indicates ability to generalize and reason abstractly.

Task: The child is required to complete sentences indicating items that are similar or to make analogies. Examples: "You smell with your nose and taste with your _____." "How are a football and a baseball alike?"

Classroom Information: Classification skills on a concrete and/or abstract level; ability to generalize; word retrieval*; ability to make analogies.

Arithmetic: (WISC-R & WPPSI) Measures ability to reason numerically; requires concentration and attention.

*Technical terms in glossary

Tasks: Quantitative reasoning and arithmetic skills are both measured. The child is shown a card with three triangles and asked to point to the smallest. Items are counted. Verbal problems such as the following must be solved: "Susie had four birds in a cage. One flew away; how many did she have left?"

Classroom Information: One-to-one correspondence in counting; rote counting skills; knowledge of quantitative word concepts; addition, subtraction, multiplication, and division skills in verbal problems.

Vocabulary: (WISC-R & WPPSI) Measures word knowledge acquired from experience and education; expressive language skills.

Task: The child is required to define words. Example: What does "fork" mean?

Classroom Information: Verbal fluency* and ability to express concepts verbally; auditory perception*; general language development.

Comprehension: (WISC-R & WPPSI) Measures the ability to use practical judgement in everyday social situations.

Task: The child is asked to explain actions or events that take place. Example: "Why should you brush your teeth every day?"

Classroom Information: Level of social skills knowledge; perception of reality; verbal fluency*.

Digit Span: (WISC-R only) Measures attention and immediate auditory memory; ability to sequence verbally.

Task: The child is required to repeat a series of letters.

Classroom Information: Auditory perception*; immediate rote memory* (do not confuse a good memory as measured by this task with having a good memory for what is spoken to the child in the classroom. The difference in environments could cause difficulties in the classroom.)

Sentences: (WPPSI only) Measures attention and immediate auditory memory.

*Technical Terms in Glossary

Task: The child is required to repeat sentences spoken to him in a word-for-word manner. Example: "Bill is nine feet tall."

Classroom Information: Auditory perception*; immediate rote memory* (good performance on the test does not indicate the child will remember what is told him in the classroom due to the different environments.)

Performance Scale

Picture Completion: (WISC-R & WPPSI) Reflects reality perception and observation in identifying missing parts from a whole.

Task: The child is required to indicate details missing from objects in pictures. Example: Picture of airplane -- child must indicate one wing is missing.

Classroom Information: Visual gestalt*; visual perception*; visual discrimination*.

Animal House: (WPPSI only) Measures sign/symbol association; reflects memory and goal awareness.

Task: The child is required to associate a color with a given object according to a key that is demonstrated. Example: Brown blocks are placed on pictures of trees; yellow blocks are placed on pictures of flowers; blue blocks are placed on pictures of ponds.

Classroom Information: Visual memory*; visual discrimination*; figure ground perception*; visual-motor integration*; pincer grasp and release; left-to-right and/or top-to-bottom orientation; visual tracking; ability to use a key.

Picture Arrangement: (WISC-R only) Measures ability to comprehend and evaluate social situations; sequential planning.

Task: The child is required to put a series of pictures in an order that makes a continuous, visually sequenced story.

Classroom Information: Visual sequencing*; fine motor manipulative skills; left-to-right orientation; visual spatial relationships*.

*Technical Terms in Glossary

Intelligence Tests
WISC-R and WPPSI (Cont.)

Mazes: (WISC-R & WPPSI) Measures visual planning and foresight and visual-motor coordination.
Task: Child is required to use a pencil to find a route either through or out of a maze.
Classroom Information: Visual tracking; pencil grasp, bilateral integration*; eye-hand coordination* (in a highly structured task).

Block design: (WISC-R & WPPSI) Measures ability to analyze and form abstract designs; involves visual-motor coordination*.
Task: Child is required to make a block pattern from either an actual model or from a picture.
Classroom Information: Visual perception*; fine motor manipulation; spatial orientation*; form perception (basically, the ability to follow a visual pattern).

Geometric Design: (WPPSI only) Reflects visual perception* and visual motor* functioning.
Task: The child is required to reproduce geometric figures with paper and pencil when shown a picture of a figure. Example: a square.
Classroom Information: Spatial orientation*; paper/pencil skills in an unstructured setting ; bilateral integration*.

Coding: (WISC - R only) Measures visual memory; speed and accuracy in copying symbols.
Task: The child must write specific symbols inside a shape or beneath a particular item according to a pattern demonstrated by a key. Example: A reversed "E" is written beneath all squares while a reversed "L" is written beneath all circles.
Classroom Information: Paper/pencil skills; left-to-right and/or top-to-bottom orientation; ability to use a visual key or set pattern in associating shapes with symbols.

Object Assembly: (WISC-R only) Visual-motor task involving perception and organization of concrete forms.
Task: The child is required to place shapes in relationship to each other to form a mean-

*Technical Terms in Glossary

ingful whole. Example: Puzzle of a cat.

Classroom Information: Visual gestalt*; visual perception*; fine-motor manipulation; ability to recognize a whole object from its parts; ability to complete puzzles.

*Techincal Terms in Glossary

PEABODY INDIVIDUAL ACHIEVEMENT TESTS (PIAT)

Author: L.M. Dunn and F. Markwardt

Publisher: American Guidance Service

Diagnostic: Yes; compares math reading, spelling, and general information skills.

Scores obtained: Raw Scores; Age or Grade Equivalents; Percentile Ranks and Standard Scores for : Mathematics, Reading Recognition, Reading Comprehension, Spelling, and General Information.

Ages: 5-0 years through elementary school; may be used for a diagnostic test at almost any age level above 5-0 years.

Administration: This test should be administered in an individual setting. Any teacher, professional, or paraprofessional may use this instrument with minimal training. Administration time is approximately one hour or less.

Child Performance: The child must be able to comprehend oral directions, have adequate vision for medium sized pictures, verbalize responses, and be able to point to response choices. No paper/pencil skills are required.

Test Description: The test is divided into five sections: mathematics, reading recognition, reading comprehension, spelling, and general information.

Mathematics measures quantitative word knowledge such as "more, most, least, longest, etc." Number recognition is also tested as are addition, subtraction , division, and multiplication skills at the higher age ranges.

Reading Recognition measures visual abilities such as visual discrimination* of similar objects, matching ability for identical objects and identical words and letters.

Reading Comprehension measures the ability of the child to remember pertinent facts and ideas from passages he has read. This not tested at the preschool age range.

*Technical Terms in Glossary

PIAT (Cont.)

Spelling tests the ability to recognize letters when they are said by the examiner; the ability to recognize printed words when they are said by the examiner.

General Information measures the child's fund of general knowledge that he has gained through experience, such as "What is the color of an emerald?"

Classroom Information: The following items of information can be gained from observation of the child during the testing session or from item analysis of his successes and failures. This information could be useful to the classroom teacher for planning diagnostic lesson plans.

Mathematics: Knowledge of quantitative words; recognition of Arabic numerals; one-to-one correspondence in counting; addition, subtraction, division, and multiplication skills at the higher age ranges.

Reading Recognition: Visual discrimination* of shapes and letters; sound/symbol* recognition of letters when they are called by the examiner; auditory comprehension*; visual perception*.

Reading Comprehension: Ability to retain information the child reads himself (not tested at preschool age ranges).

Spelling: Sound/symbol* recognition of letters and words when read by the examiner; word attack skills; auditory comprehension*; visual perception*.

General Information: General knowledge about the world and society.

WIDE RANGE ACHIEVEMENT TEST (WRAT)

Authors: J.F. Jastak and S.R. Jastak

Publisher: The Psychological Corporation

Diagnostic: Yes: compares reading, spelling, and arithmetic abilities.

Scores Obtained: Grade Equivalents; Percentile Ranks; Standard Scores for : Reading, Spelling, and Arithmetic

Ages: 4-0 through adulthood. Level I is used from 4-0 to 12-0 years. Level II is used from 12-0 to adulthood.

*Technical Terms in Glossary 50

Administration: The test should be administered in an individual setting. Examiners can be professionals, teachers, or paraprofessionals with minimal training. Administration time is approximately 30 minutes.

Child Performance: Paper/pencil skills are required. The child is also required to understand oral directions and make verbal responses. Adequate vision for fairly small shapes, letters, and words is required.

Test Description: The test is divided into three sections: reading, spelling, and mathematics.

Reading requires the childto match letters, recognize letters and name them, and read words out of context.

Spelling requires the child to match shapes with symbols and spell words.

Arithmetic requires the child to indicate "more" or "less" when read two numbers by the examiner; count with one-to-one correspondence; and, at the older ages, perform arithmetic problems with paper and pencil.

Classroom Information: The following information can be observed during the testing session or gained through analysis of successes and failures on individual tasks and items.

Reading: Sound/symbol* association for letters and words; knowledge of the alphabet; word attack skills when reading; auditory perception*.

Spelling: Visual discrimination* for letters and words; visual memory*; paper/pencil skills in writing or printing.

Arithmetic: One-to-one correspondence in counting; auditory perception*; visual perception*; arithmetic facts.

*Technical Terms in Glossary

ARIZONA ARTICULATION PROFICIENCY SCALE (ARIZONA)

Author: J. B. Fudala

Publisher: Western Psychological Services

Diagnostic: Yes: for articulation skills

Scores Obtained: Consonant Score; Vowel Score; Total Score; severity rating; and intelligibility rating.

Ages: Can be used with any age

Administration: The test should be administered in an individual setting by a trained examiner. Testing time is approximately 10 to 20 minutes.

Child Performance: The child must have adequate vision and vocabulary to name medium sized black and white pictures or must be able to imitate a verbal model.

Classroom Information: Discussion with the examiner (presumed to be a speech therapist) can indicate what steps should be taken in the classroom to aid the child with any articulation problems.

ASSESSMENT OF CHILDREN'S LANGUAGE COMPREHENSION (ACLC)

Author: R. Foster, J. Giddan, J. Stark

Publisher: Consulting Psychologists Press

Diagnostic: Yes: measures the child's ability to understand utterances of increasing length and complexity.

Scores Obtained: Vocabulary Score; the ability of the child to understand utterances containing two, three, and four critical elements

Ages: 3-0 to 6-6 years

* Technical Terms in Glossary

ACLC (cont.)

Administration: The test should be administered in an individual setting by a trained examiner. Administration time is 20 to 35 minutes in most cases.

Child Performance: Adequate vision, hearing, and pointing skills are needed as the child must listen to a cue word or phrase and choose the picture that represents the verbal cue. Verbal responses are not required. The pictures which the child must discriminate are black and white line drawings and silhouettes.

Test Description: The test is divided into four sections: single words, utterances with two critical elements, utterances with three critical elements, and utterances with four critical elements. Critical elements should not be confused with the number of words in the utterance. An example of a statement with four critical elements would be "bird sitting in the tree."

Classroom Information: The examiner can indicate at which level a child is able to understand verbalizations. The teacher can then adjust the length and complexity of her verbalizations to the child to help ensure he will understand what is said to him.

BOEHM TEST OF BASIC CONCEPTS (BOEHM OR BTBC)

Author: A.E. Boehm

Publisher: The Psychological Corporation

Diagnostic: Yes: measures basic concepts in various areas

Scores Obtained: Raw scores and percentile comparison of scores by grade (kindergarten and first grade), beginning or midyear, and socio-economic status. The test is available in two forms (A and B) to permit pre- and post-testing.

Ages: 5-0 to 7-0 years

*Technical Terms in Glossary

Boehm (cont.)

Administration: This test may be administered in a group situation or in an individual session. No special training is needed to administer the tests. Administration time for both booklets is approximately 35 minutes to one hour.

Child Performance: The child must have adequate receptive language, visual acuity, and visual perception to choose which picture correctly represents a verbal concept. The child is directed to mark an "X" on his response choice. In group settings, the child must also be able to follow directions given to the group, turn pages, and determine which row of pictures the group is working on.

Test Description: The BTBC is composed of two booklets and is a pictorial multiple choice test. It measures concepts considered necessary for achievement in the first years of school. Concepts measured are: quantity and number, space (location, direction, orientation, dimension), time , and miscellaneous. The purpose of the test is to identify concepts the teacher may mistakenly assume the child understands.

Classroom Information: As the overall test score does not indicate the particular concepts with which the child is having difficulty, the teacher or examiner must perform an item analysis of the child's successes and failures. Providing the child has the skills to perform on the test as it was administered, the resulting information can be useful in planning activities and lessons to aid the child on the concepts with which he had difficulty. Remediation guides are available from Hazel Bright, 3840 S. Higuera, Space 105, San Luis Obispo, California 93401.

GOLDMAN-FRISTOE TEST OF ARTICULATION*

Author: R. Goldman and M. Fristoe

Publisher: American Guidance Service

Diagnostic: Yes: for articulation difficulties with consonants and blends

* Technical Terms in Glossary

Scores Obtained: Articulation proficiency score of consonant sounds and blends at the beginning, middle, and end of words. Number of errors can be compared to age norms from 6-0 to 16-0 years.

Ages: Norms for 6-0 to 16-0 years, but test can be used with any age child

Administration: The test should be administered in an individual setting by a trained examiner. Administration time is approximately 15 minutes, not including the story section.

Child Performance: The child must be able to imitate a verbal model or have adequate vision and vocabulary to name large colored pictures.

Test Description: The test is divided into three parts. In the Sounds-in-Words subtest, thirty-six pictures are named by the child and the examiner records the child's articulation of speech sounds. In the Sounds-in-Sentences subtest, the child is asked to repeat two stories in his own words; the examiner uses pictures to aid the child's memory and records his speech sounds. On the Stimulability subtest, the child is asked to pronounce a previously misarticulated phoneme while given both visual and oral stimulation, to give the examiner an idea of the prognosis for correcting the sound error.

Classroom Information: Discussion with the examiner (presumed to be a Speech Therapist) will aid the teacher in making plans that will aid the child with his language and/or articulation problems that are indicated by the examination. Due to the administration techniques used, problems other than articulation difficulties may possibly be discovered, problems such as auditory memory difficulties* or word retrieval* problems.

HOUSTON TEST OF LANGUAGE DEVELOPMENT (HTLD OR HOUSTON)

Author: M. Crabtree

Publisher: The Houston Test Company

*Technical Terms in Glossary

Diagnostic: No: the test yields an overall language developmental score.

Score Obtained: Language Age Equivalent

Ages: 6 months to 6-0 years

Administration: This test should be administered in an individual setting by a trained examiner. Administration time is approximately 15 to 30 minutes: time may be shorter with children of low language abilities.

Child Performance: At the younger ages, the HTLD is mostly an observation scale. At older ages, the child is required to name pictures, draw with crayons, and manipulate objects. Motor performance or visual difficulties could lower the child's score.

Classroom Information: Observation during the testing session, and analysis of the child's performance on test items can provide the teacher with information concerning: pencil grasp, ability to imitate geometric design drawing, auditory memory*, rote counting skills, one-to-one correspondence in counting, vocabulary knowledge, and verbal fluency.*

ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES (ITPA)

Authors: S.A. Kirk, J.J. McCarthy, W.D. Kirk

Publisher: University of Illinois Press

Diagnostic: Yes: compares auditory and visual abilities

Scores Obtained: Individual subtest scale scores; Composite Psycholinguistic Age score; mean scale score. Performance on the individual subtests can be compared to other children the same age by use of scale scores. Individual subtests scores can be compared with the child's scores on the other subtests to reveal child's strengths and weaknesses in the various areas tested.

Ages: 3-0 to 10-3 years

*Technical Terms in Glossary

Administration: This test should be administered in an individual setting by a certified examiner. Testing time is approximately one to one and a half hours.

Child Performance: Adequate vision and hearing are required as well as sufficient language abilities to respond to a variety of verbal and non-verbal tasks.

Test Description and Classroom Information:

Within the limits of the test, it can be used to compare performance as follows: visual vs. auditory channel; representational vs. automatic level (ability to deal meaningfully with auditory and visual materials, eg. recognize associations vs. performance that can be carried out with less reference to the meaning of the material, such as repeat visual and auditory patterns, provide word endings); and receptive vs. expressive process.

A description of the subtests, the activities the child is required to perform, and the information a classroom teacher would be interested in is given below.

Auditory Reception: Ability to derive meaning from verbally presented material; to understand words and the meaning conveyed by word order.

Task: The child must answer yes or no to questions such as "Do boats drink?"

Classroom Information: Relates to child's ability to listen to and answer questions about a story read to him, follow directions, engage in verbal games or activities with others such as playing store, "Show and Tell", etc.

Visual Reception: Ability to gain meaning from visual material.

Task: The child is shown a stimulus picture then required to choose one of 4 other pictures that is similar to the first. Similarities become more abstract as the subtest advances.

Classroom Information: Relates to child's ability to understand actions in picture, detect "what's wrong" in a picture, recognize landmarks on familiar routes, observe changes

*Technical terms in glossary

in his environment, note visual differences between groups (2 pencils vs. 3 pencils), respond to visual demonstrations.

Auditory Association: Ability to relate concepts presented orally; to complete verbal analogies.

Task: The child is required to complete analogy sentences involving opposite and associated concepts. (e.g. "A stove is hot; a refrigerator is _____.")

Classroom Information: Relates to child's ability to recognize relationships when items are presented orally, categorize without visual cues, understand guessing games and solve riddles, relate stories or events to his own experiences, identify and provide opposite concepts.

Visual Association: Ability to relate visual symbols in a meaningful way; to complete analogies on a visual level.

Task: The child is shown a stimulus picture and asked to indicate (point) which of four other pictures is associated with the stimulus picture (e.g. pencil-paper).

Classroom Information: Relates to ability to perceive relationships and categories of pictured items, recognize as meaningful things made of clay or playdough, understand sequence of pictures in comic strip, engage in creative play with objects (pencil is a gun) or draw imaginative pictures rather than mere copying.

Verbal Expression: Ability to express concepts orally; to generate and express ideas in several categories about given objects.

Task: The child is shown familiar objects and requested to tell all he can about each, after an example has been given of things he could say in several categories, abstract and concrete. Although the examiner is given an opportunity to informally assess the way in which the child expresses himself (sentence construction and organization), the score is based on the ideas generated not the child's proficiency in expressing them.

*Technical Terms in the Glossary

Classroom Information: Relates to child's ability to describe pictures or experiences, define words, use a variety of specific words (ie. names, attributes) rather than vague words (e.g. "Thing"), respond as well verbally as motorically.

Manual Expression: Ability to express ideas through gestures; to demonstrate ideas without using words.

Task: The child is shown a picture of an object and asked to demonstrate non-verbally what he would do with it.

Classroom Information: Relates to child's fine motor coordination and planning abilities, to his non-verbal conceptualization of objects and actions, to his ability to combine movements to perform meaningful actions, act out stories or pantomime situations.

Auditory Memory: Short term memory for a sequence of digits (rote, non-meaningful memory).

Task: The child is required to repeat a series of digits read by the examiner. (e.g. 7-4-3-9).

Classroom Information: Relates to rote(non-meaningful) memorization ability such as reciting numbers to 10, days of week, letters of alphabet, telephone number, address, etc. Relates less directly to ability to remember verbal material involving more meaning such as following directions, repeating nursery rhymes and recalling events.

Visual Memory: Ability to reproduce sequences of non-meaningful visual symbols from memory.

Task: The child is shown sequences of figures and required to manipulate chips to reproduce the pattern from memory.

Classroom Information: Relates to ability to write name or other words and numbers from memory, copy words or designs without constantly referring back to the model, learn sight vocabulary words, recall location of objects in a room, or pictures on a page seen many times.

Grammatic Closure: Samples child's syntactical and grammatical abilities; ability to use words and word forms that reflect plurals, possession, tense, etc. and to automatically include these changes when necessary.

Task: The child is asked to provide a word or words that correctly complete a sentence describing a picture stimulus (e.g. "This boy has one boat and this girl has two____.")

Classroom Information: Should relate to child's use of pronouns, plurals, negatives, verb tense endings, word order, etc. in spontaneous speech. Examiner might provide specific remediation suggestions for the classroom.

Visual Closure: Ability to find several known, partially concealed objects in a detailed field; figure ground discrimination*.

Task: The child is shown a stimulus picture and then is required to find as many of that item as he can in another picture in which only part of the stimulus figure appears.

Classroom information: Relates to child's ability to pick a letter out of a word or word out of a sentence.

Auditory Closure: (Optional, supplementary subtest) Ability to fill in missing sounds and syllables to produce a completed word.

Task: The child is required to verbally complete partially spoken words e.g. MO/ER = Mother

Sound Blending: (Supplementary subtest) Ability to synthesize the separate parts of words into a whole.

Task: Words or nonsense words are separated into a various number of sounds; the child is required to blend the sounds and repeat the word or nonsense words. e.g. B-OG = Bog.

Classroom Information for Auditory Closure and Sound Blending: Both relate to word attack skills in reading, ability to rhyme words, understand slightly distorted speech (e.g. fast, whispered, static on record player), repond to first sound clues when he can't think of a word.

Comments: One of the major strengths of this test is being able to compare a child's performance on one task or a group of tasks to his performance on a different task or different group of tasks. By analyzing the child's pattern of performance on the various subtests, overall strategies for teaching and remediation can be planned. For

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example, if a child is found to have strengths in the visual channel and weaknesses in the auditory channel, the teacher should realize that he will learn quicker, or understand information with less effort, if the information is presented visually as well as auditorially. In this case, visual stimuli will aid in teaching whereas information presented only in a verbal manner may not be understood by the child. Naturally, the reverse of this example is quite possible depending on the child.

NORTHWESTERN SYNTAX SCREENING TEST (NSST or NORTHWESTERN)

Author: L. Lee

Available from: Dr. Laura Lee, Northwestern University, Evanston, Illinois, 60201.

Diagnostic: Yes: for receptive and expressive use of syntax

Scores Obtained: Receptive Score and Percentile Rank; Expressive Score and Percentile Rank.

Ages: 1-6 to 6-0 years

Administration: This instrument should be administered in an individual setting by an experienced examiner. Administration time is approximately 30 to 40 minutes.

Child Performance: The child must have good visual discrimination* and must be able to verbalize. He is required to point to pictures on the receptive section of the test and to verbalize on the expressive section of the test. The NSST assesses word order comprehension in sentences and expressive abilities in imitation of the examiner.

Classroom Information: Discussion with the examiner may reveal that observation during testing indicates visual discrimination* or visual perception* problems. The examiner may be able to give the teacher suggestions on techniques or activities to aid the child with language problems.

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PRESCHOOL LANGUAGE SCALE (PLS)

Authors: I.L. Zimmerman, U.G. Steiner R. L. Evatt

Publisher: Charles E. Merrill Publishing Co.

Diagnostic: Yes: Gives general comparison of receptive versus expressive language skills with emphasis on concepts.

Scores Obtained: Auditory Comprehension Age score; Verbal Ability (expression) Age score; Language Age score (the Language Age score can be converted to a Language Quotient).

Ages: 1-5 years to 8-0 years

Administration: The test should be administered in an individual setting by a trained examiner. Administration time is approximately 20 minutes to one hour.

Child Performance: Both pointing and verbal responses are required of the child; therefore adequate vision, hearing, and some vocalization skills are needed. Although this is a language screening test, some fine motor manipulative skills are also required.

Description of the Test: The Preschool Language Scale is a screening measure, designed to indicate the level of the child's language development. It consists of three parts -- Auditory Comprehension Scale, Verbal Ability Scale, and an Articulation Screening Section. Developmental ages are given for items and age scores can be derived from the child's scores. While it samples language skills such as auditory memory and association skills, it is heavily influenced by the child's knowledge of concepts such as long/short and color names and should not be viewed as a comprehensive assessment measure.

Classroom Information: The test samples the child's ability in counting, verbal reasoning and verbal association* skills, imitative abilities, and conceptual development in classification skills. Discussion with the examiner should reveal information useful to the classroom teacher for further investigation of possible weaknesses.

*Technical terms in glossary

TEST FOR AUDITORY COMPREHENSION OF LANGUAGE (TACL)

Author: E. Carrow

Publisher: Learning Concepts

Diagnostic: Yes

Scores Obtained: Raw Score; Age Equivalence; Mean for Age; Percentile Rank of Comprehension Abilities.

Ages: 3-0 to 6-11 years

Administration: The test should be administered in an individual setting by a trained examiner. Administration time is 25 to 45 minutes.

Child Performance: Only non-verbal pointing responses are required from the child on this test. The child must have adequate vision and hearing skills.

Test Description: Norms are available for Anglo, Mexican-American, and Black populations at the kindergarten and first grade levels. The instrument assesses the child's understanding of the meaning of vocabulary and his understanding of various word endings and language constructions (e.g. plurals, questions, verb tenses).

Classroom Information: Individual test item analysis and observation during testing may reveal strengths and weaknesses. Discussion with the examiner may lead to remedial techniques appropriate for the classroom.

UTAH TEST OF LANGUAGE DEVELOPMENT (UTLD OR UTAH)

Authors: M. Mecham, J.L. Jex, J. D. Jones

Publisher: Communication Research Associates Inc.

Diagnostic: No: item analysis could reveal some information about receptive vs. expressive abilities. This is basically a screening instrument.

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Scores Obtained: Language Age Equivalent Score

Ages: 1-6 to 14-6 years

Administration: The test should be administered in an individual setting by an experienced examiner. Administration time is approximately 30 to 45 minutes.

Child Performance: Adequate vision, hearing, and fine motor skills are required as both non-verbal and verbal responses are elicited from the child.

Test Description: The test is designed to measure expressive and receptive language skills . From the tally of correct and incorrect responses, the child receives a language age.

Classroom information: Informal observation or test item analysis provides a sample of the child's abilities in the following areas: Pencil grasp; visual motor integration*; eye-hand coordination*; auditory memory*; sound/symbol association*; visual memory*; and receptive vocabulary. Discussion with the examiner may lead to teaching techniques that will help a child in the above areas should his skills appear weak.

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BEERY DEVELOPMENTAL TEST OF VISUAL-MOTOR INTEGRATION (BEERY OR VMI)

Authors: K. Beery and N. Buktencia

Publisher: Follett Educational Corporation

Diagnostic: Yes: aids in determining visual perception* problems from eye-hand coordination* problems.

Scores Obtained: Raw Score; Age Equivalent Score

Ages: 2-0 years to 15 -0 years

Administration: The test may be administered in either a group or individual setting: individual administration is usual at the preschool level. The test may be administered by trained paraprofessionals, but interpretation of the results takes training and experience.

Child Performance: The child is required to reproduce geometric figures with paper and pencil. He must be able to understand the oral directions or to understand pantomimed directions. Verbal responses are not required. Less than excellent vision is permissible as the figures are large and bold.

Test Description: The test consists of a series of geometric shapes that must be reproduced by the child. Each page has three items and a designated spot for the child to draw. The test is not timed.

Comments: While this test is quick and easy to administer, evaluation of the results takes experience. Suggestions for remediation are contained in the manual.

Classroom Information: From the child's performance, the following information useful to the classroom teacher can be obtained: penicl grasp; visual perception*; bilateral integration*; visual-motor integration*; ability to trace a geometric figure.

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FROSTIG DEVELOPMENTAL TEST OF VISUAL PERCEPTION (FROSTIG)

Author: Marianne Frostig

Publisher: Consulting Psychologists Press

Diagnostic: Yes

Scores Obtained: Raw Scores; Scale Scores; Age Equivalents for each of the subtests; and an overall Perceptual Quotient.

Ages: 4-0 to 8-11 years

Administration: The test can be administered in either an individual or group setting. The examiner should be experienced in the administration and evaluation of the test. Administration time is approximately 30 to 45 minutes in an individual setting.

Child Performance: Adequate hearing, vision and fine motor coordination are required for the child to interpret instructions, perceive the correct answer, and make an appropriate graphic (drawing, tracing, outlining) response. No verbal responses are required. The child must understand the concept of "same and different" to perform on the test.

Test Description: The test is divided into five subtests which are as follows:

Eye-Motor Coordination measures the child's ability to draw a continuous straight, curved, or angled line between boundaries of various widths.

Figure-Ground Discrimination assesses the child's shift in perception of figures against increasingly complex backgrounds.

Constancy of Shape assesses the child's ability to recognize circles and squares in a variety of sizes, shadings, and positions in space.

Position in Space assesses the child's ability to discriminate reversals and rotations in figures presented in a series.

Spatial Relations assesses the child's ability to analyze and copy forms and patterns from the very simple to the very complex.

*Technical Terms in Glossary

FROSTIG (Cont.)

A perceptual age equivalent and a scale score is obtained for each subtest to facilitate identification of specific problem areas. The Perceptual Quotient indicates the child's overall visual-perceptual functioning. The test consists of 72 items presented in black and white line drawings.

Classroom Information: The perceptual skills assessed by this test are considered to be directly related to the child's ability to learn reading and writing skills. There are specific remedial programs available for deficits in any of the above areas. Discussion with the examiner may yield appropriate classroom remediation programs.

MOTOR-FREE VISUAL PERCEPTION TEST (MFVP)

Authors: R. P. Colarusso, D.D. Hammill

Publisher: Academic Therapy Publications

Diagnostic: Yes, but only through item analysis.

Scores Obtained: Raw Scores; Perceptual Ages; and Perceptual Quotient in visual perception*.

Ages: 4-0 to 8-11 years

Administration: The test should be administered in an individual setting. Teachers, psychologists, educational specialists, therapists, and others can administer the test with minimal training.

Child Performance: All responses made by the child are by pointing to his response choice. He must be able to understand the concept of "same and different" and comprehend the oral directions to take the test.

Test Description: The test consists of 36 items presented in multiple-choice fashion. There are 4 black and white line drawings on each page per test item. The following areas of visual perception are assessed: spatial relationships*, visual discrimination*; figure-ground*; visual closure*, and visual memory*.

No individual norms are provided for each of the subtests; therefore, areas of deficit must be determined by the examiner through item analysis.

*Technical Terms in Glossary

MFVP (Cont.)

Classroom Information: Specific remedial techniques are available for each of the areas tested. Discussion with the examiner should provide an appropriate classroom remediation program for deficit areas.

SOUTHERN CALIFORNIA SENSORY INTEGRATION TEST (SCSIT OR AYRES)

Author: A. Jean Ayres

Publisher: Western Psychological Services

Diagnostic: Yes

Scores Obtained: Raw Scores and Standard Deviations from the mean. Several tests yield left and right side scores which can be used to compare the performance abilities between the two sides of the body.

Ages: 4-0 to 10-0 years

Administration: The test should be administered in an individual setting. A highly skilled and proficient examiner is essential to administer the test battery. Qualifications for administering the SCSIT include an acquaintance with the principles of the statistical bases of psychological test construction and interpretation, sufficient familiarity with the nature of sensory integrative dysfunction to enable accurate interpretation, and perceptual-motor* skills necessary for smooth test administration. Administration time is two to three hours.

Child Performance: Varies with the subtest being administered, but a great deal of paper/pencil work is necessary. See descriptions of individual subtests. Adequate vision, hearing, and the ability to listen and follow directions are required for performance on the test.

Test Descriptions: This test is actually a battery of 17 tests which are designed to detect and determine the nature of sensory integrative dysfunction. The scores of each test are evaluated in terms of patterns of dysfunction rather than as individual factors since there is rarely only one dysfunction seen exclusive of others.

*Technical Terms in Glossary

SCSIT (Cont.)

At this time, the SCSIT can assist in differentiating four (4) types of sensory integrative disorders: (1) Form and Space Perception, (2) Postural and Bilateral Integration, (3) Developmental Apraxia, (4) Tactile Defensiveness.

Developmental Area, Subtest, and Classroom Information:

Form and Space Perception: the ability to perceive the constancy of a form regardless of factors that may appear to change it (i.e., different size, texture, angle, etc.) and to perceive the position of one object in relation to another.

Subtests:

Position in Space: measures the perception of the same form in different orientations.

Space Visualization: requires perception of stimuli composed largely of spatial elements including mental manipulation of space. Child choses one of two forms to match a form board presented to him.

Design Copying: measures the capacity of the brain to visually perceive a geometric design and to duplicate that design.

Kinesthesia: measures the capacity to perceive joint position and movement in the body and extremities.

Manual Form Perception: tests stereognosis (identifying the visual counterpart of a geometric form held in the hand with the child's vision of his hand occluded). Example: the child is given a cube to hold but cannot see what he is holding -- he is then required to point to a picture (one of various choices) of the item he is holding.

Figure-ground Perception: assists in determining deficits in visual perception which require selection of a foreground figure from a rival background (somewhat like hidden pictures).

Graphesthesia: measures tactile perception. Child attempts to reproduce a simple design on the back of his hand that was previously drawn there by the examiner.

Classroom Information: There are specific remedial programs available for difficulties in the above areas. Discussion with the examiner may yield appropriate classroom activities to aid the child. Dysfunctions* in some or all of the above areas can be noted in the classroom by the following behaviors:

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1. Inability to put puzzles together which are not difficult for peers
2. Unable to move between or through objects guided by vision and an awareness of body dimensions. (Trouble with obstacle courses, the child is "clumsy.")
3. Problems with block designs
4. Trouble with reading -- may lose place while reading
5. Has difficulty picking out one figure from a group picture or picking out a word from a sentence
6. May show problems with reversals in both reading and writing (also drawing geometric shapes)
7. Has problems with directionality -- up/down, left/right, etc.
8. Can't draw basic geometric shapes or match them visually
9. Trouble copying letters and numbers -- problems matching them visually

Discussion with examiner may result in classroom activities or techniques to help the child with his problem.

Postural and Bilateral Integration: ability of the brain to integrate the two cerebral hemispheres so that the two body sides work in a smooth, coordinated manner. Integration of the two body sides involves the ability to use the body sides together (bilaterally), to use them independently at the same time (reciprocally -- contrasting activities) and to maintain good postural adaptations (as in sitting and standing balance).

Subtests:

Standing Balance-Eyes Open and Eyes Closed: measures the ability to balance oneself while standing on one foot with and without benefit of vision.

Crossing Midline of the Body: requires the child to imitate the examiner as the examiner uses either his right or left hand to point to either his right or left ear. Example: right hand/left ear; left hand/right ear, etc.

Right-Left Discrimination: requires discrimination "right from left" on self, another person, and location of an object in relation to himself.

Bilateral Motor Coordination: requires smoothly executed movements of an interaction between both upper extremities (arms).

*Technical Terms in Glossary

Kinesthesia: Measures the capacity to perceive joint position and movement in the body and extremities.

Clinical Observations: These tests should be interpreted along with clinical observations of reflex development and extra-ocular control.

Classroom Information: Classroom problems sometimes seen with this deficit include:

1. Poor coordination of the two body sides in activities (catching a ball)
2. Poor equilibrium reactions (balance) when standing, hopping, etc.
3. Problems performing rhythmic movements and playing two-handed instruments and games
4. Difficulty jumping with both feet
5. Difficulty clapping out a rhythm with both hands.
6. Tends to right hand for use on the right side of the body and left hand for use on the left side of the body -- avoids crossing body midline.
7. Problem distinguishing left/right
8. Trouble with spatial relations
9. Trouble in reading and writing since both require eyes to cross midline
10. Poor cutting skills with scissors
11. May not use left hand automatically for stabliza-

tion of paper while right hand is writing.

Discussion with the examiner may result in appropriate classroom remedial programs.

Developmental Apraxia: inability or reduced ability to perform non-habitual, skilled movements.

Subtests:

Imitation of Postures: assesses ability of the child to assume a series of non-habitual positions or postures as demonstrated by the examiner.

Motor Accuracy Left and Right (Hand): assesses ability to trace a line with a pencil first with the dominant hand; then with the non-dominant hand.

Bilateral Motor Coordination: assesses ability to smoothly execute movements of an interaction between both upper extremities.

Design Copying: measures the capacity of the brain to visually perceive a geometric design and to duplicate that design.

Tests of Tactile Perception:

Manual Form Perception: measures stereognosis (idenfying the visual counterpart of a geometric

*Technical Terms in Glossary

form held in the hand occluded.)

Graphesthesia: measures tactile perception as the child attempts to reproduce a simple design on the back of his hand as was previously drawn there by the examiner.

Localization of Tactile Stimuli: measures tactile perception. Child is expected to place his finger on a spot on his hand or arm previously touched by the examiner.

Double Tactile Stimuli Perception: two tactile stimuli are applied simultaneously to either or both cheek and hand of the child who then identifies where he was touched.

Kinesthesia: measures the capacity to perceive joint position and movement in the body and extremities.

Classroom Information: Classroom problems sometimes seen with this deficit include:

1. Excessive clumsiness when approaching new tasks
2. Messy handwriting
3. Difficulty imitating body postures and movements and in "Simon Says" games and performing hand gestures in songs
4. Poor body awareness
5. Poor dressing skills
6. Difficulty tracing and coloring
7. Poor oral control -- poor eating and poor speech
8. Poor gross and fine motor coordination

Discussion with the examiner may result in appropriate classroom remedial techniques or activities to aid the child with his problem.

Tactile Defensiveness: a disorder characterized by an aversive or defensive reaction to tactile and other stimulation. Reactions may be to flee, fight, display emotionally unstable characteristics, make excuses to avoid tactile encounters. Children with these observed reactions may be restless, distractable and often over-sensitive to sound.

Clinical Observations: no test actually measures this disorder. It is, rather, observed as tests involving tactile stimulation are administered. Tests on the SCSIT which elicit this type of response are those measuring tactile perception as described under the Developmental Apraxia syndrome.

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Classroom Information: Classroom problems sometimes seen with this difficulty are:

1. Negative response to being touched as in a hug or pat given for positive physical reinforcement
2. Hyperactivity*/Hypermobility -- difficulty staying seated or still while seated or standing
3. Difficulty concentrating -- poor attention to task
4. Tends to fight when standing in line
5. Excessively sensitive to hair combing or face washing
6. Tends to avoid body contact -- even to the point where he wears a coat or sweater, long sleeves, etc. when unnecessary; may avoid types of materials which tend to irritate the skin.
7. Craves to be touched at certain times
8. Tends to spend time with adults and children whose movement patterns are fairly predictable
9. Oversensitive to high frequency, bright lights, odors
10. Becomes more so in any of the above behaviors as the day progresses.

Discussion with the examiner (presumed to be an Occupational Therapist) may result in appropriate classroom remedial techniques or activities to aid the child with his problem.

*Technical Terms in Glossary

GLOSSARY: TERMS ASSOCIATED WITH EXCEPTIONAL CHILDREN

abstract ability: the ability to comprehend relationships and to react to concepts of abstract symbols.

acuity: a sensory level function that pertains to keenness of sight, hearing, or touch. Acuity is a primary level function in terms of input where learning is concerned.

agnosia: inability to interpret sensory impression; loss of ability to recognize and identify familiar objects through a particular sense organ.

: auditory-verbal agnosia: can hear what is said, but cannot comprehend the meaning.

analysis: the decoding of information. Along with synthesis it forms the essentials of an integrative system resulting in the formulation of concepts and in the constant evaluation and reevaluation of information.

aphasia: loss of ability to comprehend, manipulate or express words in speech, writing, or signs. Usually associated with injury or disease in brain centers controlling such processes.

: auditory aphasia: cannot comprehend spoken words. Same as word deafness and receptive aphasia.

: expressive aphasia: cannot remember the pattern of movements required to speak words even though one knows what he wants to say.

apraxia: loss or partial loss of the ability to perform purposeful movements in a coordinated manner in the absence of paralysis, cerebral palsy, or sensory loss. Due in part to a disorder in sensory integration.

articulation: the execution of speech. Disorders of speech are manifested in the form of omissions (leaving out sounds), substitutions (teef for teeth), distortions (lisping) or additions (skippering for skipping). The production of speech sounds by modifying the breath stream through movements of the lips, tongue, and velum.

association: auditory association: the ability to relate spoken words in a meaningful way.

: visual association: the process whereby a child sees the relationships between concepts presented visually.

auditory association: see association

auditory blending: the ability to synthesize the phonemes of a word, when they are pronounced with separations between phonemes, so that the word can be recognized as a whole.

auditory channel: the processing of information that is essentially auditory in nature at different levels to include sensory (hearing), perception (localization, attention, discrimination, closure, figure ground), imagery (memory-sequencing), and auditory language functions (classification and association).

auditory closure: the act or ability to accurately conceptualize in a complete and meaningful form words and/or sounds which are perceived in incomplete form.

auditory discrimination: ability to identify and accurately choose between sounds of different frequency (pitch), intensity (volume) and pattern. Includes the ability to distinguish one speech sound from another.

auditory language association: the ability to understand auditorily non-categorical relationships between words or experiences presented orally. The individual can discern that a "boat" goes with "water" rather than with "sky."

auditory language classification: the ability to understand categorical relationships between words or experiences presented orally. The individual can discern that "apple" goes with "peach" rather than with "chair".

auditory memory span: the number of items that can be recalled from oral stimulation: includes immediate and delayed recall of digits, words, sentences, and paragraphs or free and controlled recall.

auditory perception: the ability to interpret or organize the sensory data received through the ear.

auditory reception: ability to derive meaning from orally presented materials.

auditory sequential memory: the ability to reproduce a sequence of auditory stimuli

auditory to visual associations: the ability to relate a sound to a symbol. The student can associate the sound of "m" or its letter name to the written symbol "m" in words printed on the chalkboard, or on a paper at his desk, etc.

bilateral: involving both sides; the use of both sides in a simultaneous and parallel manner.

central nervous system: (C.N.S.) the brain and the spinal cord. The neural tissue which comprises the brain and spinal cord.

channels of communication: the sensory-motor pathways through which language is transmitted, e.g., auditory-vocal, visual-motor, among other possible combinations.

concept: an abstract idea generalized from particular instances.

crossing the (body's) midline: ability to move the hand, foot and/or eyes smoothly across the midline of the body. Uneven ocular tracking or a tendency to avoid crossing the midline with the hand often indicates poor integration of the cerebral hemispheres and has been observed in children with learning problems.

deficit: some lack in the organism; functioning inadequately (as a weakness or disability in way information is processed).

diagnostic test: a test designed to identify strengths and weaknesses.

dysfunction: abnormal or imperfect behavior of an organ.

encoding: the expressive habits in the language process, i.e., response formation including word selection, syntax, grammar, and the actual motor production of the response.

expressive language ability: ability to communicate verbally.

eye-hand coordination: ability to use the hand(s) in the manipulation of objects or tools with vision as the guiding and correcting mechanism.

eye-hand coordination skill: this skill consists of the eyes steering the hand(s) accurately and skillfully through the three coordinates of space: right and left, up and down, fore and aft, which are matched with the coordinates of the body and vision, for the purpose of manipulating tools or forming the symbols of language. It enables one to make visual discriminations of size, shape, texture, and object location. It is dependent upon use, practice, and integration of the eyes and hands as paired learning tools.

figure-ground: tendency of one part of a perceptual configuration to stand out clearly while the remainder forms a background.

gestalt: term used to express any unified whole whose properties cannot be derived by adding the parts and their relationships; the something which is more than the sum of its parts.

grammatic closure: ability to make use of the redundancies of oral language in acquiring automatic habits for handling syntax and grammatic inflections.

hyperactivity: excessive activity - the individual seems to have a surplus of energy.

integration: the second level of organization postulated by Osgood, which organizes and sequences both incoming and outgoing neural events.

kinesthesis: the sense that informs one of movements of the body or of its several members.

lateral dominance or laterality: sidedness; the internal organization of the organism so that there is an awareness of sidedness, left or right; also used to imply the tendency to use one side of the body for most tasks (right or left handed, eyed, footed, etc.).

manual expression (motor encoding, ITPA): the ability to express ideas in meaninful gestures.

memory span: the number of related or unrelated items that can be recalled immediately after presentation.

midline: the imaginary vertical line which divides the body, into two symmetrical halves (left and right sides).

modality: an avenue of acquiring sensation; visual, auditory, tactile, kinesthetic, olfactory, and gustatory are the most common sense modalities.

neurological examination: an examination of sensory or motor responses, especially of the reflexes, to determine whether these are localized impairments of the nervous system.

perception: the interpretation of sensory information. The mechanism by which the intellect recognizes and makes sense out of sensory stimulation. The accurate mental association of present stimuli with memories of past experiences.

: perception of position in space: the accurate interpretation of an object as being behind, before, below, or to the side.

: perception of spatial relationships: comprehending the position of two or more objects in relation to oneself and in relation to each other.

: perceptual constancy: the accurate interpreation of objects as being the same in spite of their being sensed in various ways (i. e. being turned, partially concealed, smaller, or larger, etc.)

: figure-ground perception: the accurate selection from the mass of incoming stimuli, which should be the center of attention. These selected stimuli form the figure in the person's perceptual field, while the majority of stimuli form a dimly perceived ground. The figure is that part of the field of perception that is the center of the observer's attention. A disturbance in figure-ground may result because the individual confuses figure and background, reverses them, or is unable to see any differences between figure and ground.

perceptual-motor: perceptual-motor includes input (sensory or perceptual activities) and output (motor or muscular activities). A division of the two is impossible, for anything that happens to one area automatically affects

the other. Any total activity includes input, integration, output, and feedback.

receptive language ability: ability to understand spoken langage

remediation: that function which redirects or circumvents an impaired procedure in learning. It implies compensatory methods which facilitate learning rather than cure learning disorders.

reversal: a transposition of letters

rotations: the turning around of letters in a word. Example: p for d.

sensori-motor integration: the ability to receive information through the body's senses, organize (process) this information and then respond appropriately. A problem can occur at any point or points along this process and result in a sensory-motor dysfunction.

sensori-motor skill: a skill in which muscular movement is prominent but under sensory control. Example: Riding a bicycle is not simply a pattern of skilled movements. The bicycle rider has to watch the traffic and the bumps in the road and guide himself by them. These considerations in calling attention to the sensory control of skill explain the somewhat awkward term "sensori-motor skill."

sensory acuity: the ability to respond to sensation at normal levels of intensity.

sensory perceptual abilities: see "perception"

sequencing: auditory sequential memory: the ability to reproduce sequences of sounds, symbols, etc., from memory.

: visual sequential memory: the ability to reproduce sequences of figures, pictures, etc. from memory

sounding blending: ability to synthesize the separate parts of a word and produce an integrated whole

sound/symbol association: see "auditory to visual associations."

spatial orientation: awareness of space around the person in terms of form, direction, and position.

spatial relationships: the ability to perceive the position of two or more objects in relation to one's self and in relationship to one another. The ability to see similarities in shape, size, etc. of two or more objects. A child's perception of spatial relationships has a direct bearing on his performance in reading and computations. He must be able to perceive positional relationships between various objects or points of reference. Spatially, a person is the center of his own world and perceives objects in relation to himself. Body image acts as a zero focus or point of reference in terms of the knowledge of the individual's space world. Any fault in body image will be reflected in the perception of outside objects. Piaget and Inhelder state that there are five basic steps in the process of the perception of space. They are not necessarily unique or distinct but may very well overlap.

verbal expre sion: ability to express one's own concepts verbally in a discrete, relevant, and approximately factual manner.

verbal fluency: 1) the ease with which one can logically compose and express thoughts or ideas in clear, meaningful terms. 2) in Speech Pathology, verbal fluency pertains to rate and rhythm disturbances associated with stuttering.

visual association: the organizing process by which one is able to relate concepts presented visually.

visual channel: all of the processes that are involved in the visual aspects of learning to include sensation, perception, imagery, and language, as well as the related areas of visual motor integration.

visual closure: ability to identify a visual stimulus from an incomplete visual presentation; to recognize or mentally supply missing parts to a figure only partially drawn.

visual discrimination: the ability to visually discern likenesses and differences.

visual-motor coordination: the ability to relate visual stimuli to motor responses in an appropriate way (to climb stairs, to manipulate paper and pencil, etc.); the child is well coordinated.

visual-motor integration: the ability to integrate discrete visual stimuli and discrete motor movements into a distinct, unified, pattern; this term is usually used in conjunction with paper/pencil (writing or drawing) skills. (E.g. : The child is to draw a square: discrete visual stimuli are two parallel horizontal lines and two parallel vertical lines that "integrate" or join to form a unified pattern - a square. Discrete motor movements are two horizontal and vertical movements. The child must integrate the visual and motor portions of the task to make a complete pattern.)

visual gestalt: the ability to visualize a whole from the sum of its parts (to complete a puzzle without having seen the finished picture).

visual reception: ability to gain meaning from visual symbols

visual sequential memory: ability to reproduce sequences of visual items from memory.

word-attack skills: the ability to analyze unfamiliar words by syllables and phonic elements and so arrive at their pronunciation and possibly recognize their meaning.

word retrieval ability: ability to recall words. Some persons can remember words but have difficulty calling them to mind when needed. (Example: Child remembers the word "train", but can only name the picture of a train with great difficulty. He may need an inordinate amount of time to recall and say the word but usually responds quickly when given a cue such as the examiner saying "t".)

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REFERENCES

Anastasi, A. Psychological testing(3rd edition). London: The McMillan Company, 1968.

Ayres, A. J. Southern California sensory integration tests manual. Los Angeles: Western Psychological Services, 1972.

Bayley, N. Manual for the Bayley scales of infant development. New York: The Psychological Corporation, 1969.

Beery, K. E. Developmental test of visual-motor integration administration and scoring manual. Chicago: Follett Publishing Company, 1967.

Boehm, A. E. Boehm test of basic concepts manual. New York: The Psychological Corporation, 1971.

Burgemeister, B. B., Blum, L. H., Lorge, I. Columbia mental maturity scale--guide for administering and interpreting (3rd. edition). New York: Harcourt Brace Jovanovich, Inc., 1972.

Carrow, E. Test for auditory comprehension of language, English/Spanish. Austin, Texas: Learning Concepts, 1973.

Colarusso, R. P., Hammill, D. D. Motor-free visual perception test manual. San Rafael, California: Academic Therapy Publications, 1972.

Crabtree, M. The Houston test for language development--manual of directions. Houston, Texas: Houston Test Company, 1958.

Dunn, L. M. Expanded manual for the Peabody picture vocabulary test. Circle Pines, Minnesota: American Guidance Service, Inc., 1965.

Dunn, L. M., Markwardt, F. C. Peabody individual achievement test manual. Circle Pines, Minnesota: American Guidance Service, Inc., 1970.

Foster, R., Giddan, J. J., Stark, J. Manual for the assessment of children's language comprehension. Palo Alto, California: Consulting Psychologists Press, Inc., 1972.

Frost, J., Minisi, R. Early childhood assessment list, an annotated bibliography. Prepared by the Northeast Regional Resource Center, Heightstown, New Jersey (no date).

Frostig, M. Lefever, W., Whittlesey, J. R. B. Administration and scoring manual for the Marianne Frostig developmental test of visual perception. Palo Alto, California: Consulting Psychologists Press, 1964.

Fudala, J. B. Manual for the Arizona articulation proficiency scale: revised. Los Angeles: Western Psychological Services, 1970.

Goldman, R. G., Fristoe, M. Goldman-Fristoe test of articulation. Circle Pines, Minnesota: American Guidance Service, 1969.

Hiskey, M. Hiskey-Nebraska test of learning aptitude manual. Lincoln, Nebraska: Union College Press, 1966.

Jastak, J. F., Jastak, S. R. Wide range achievement test manual of instructions, revised edition, 1965. Wilmington, Deleware: Guidance Associates, 1965.

Kirk, S. A. Educating exceptional children. Boston: Houghton Mifflin Company, 1972.

Kirk, S. A., McCarthy, J. J., Kirk, W. D. Examiners manual--Illinois test of psycholinguistic abilities--revised edition. Urbana, Illinois: University of Illinois Press, 1968.

Lee, L. Northwestern syntax screening test. Evanston, Illinois: Northwestern University Press, 1971.

Leiter, R. G. General instructions for the Leiter international performance scale. Los Angeles: Western Psychological Services, 1969.

Lyman, H. B. Test scores and what they mean (2nd edition). Englewood Cliffs, New Jersey: Pretince-Hall, Inc., 1971.

McCarthy, D. Manual for the McCarthy scales of children's abilities. New York: The Psychological Corporation, 1972.

Mecham, J. J., Jex, J. L., Jones, J. D. Utah test of language development manual of instructions--revised edition. Salt Lake City: Communication Research Associates, Inc., 1969.

Minskoff, E. H., Wiseman, D. E., Minskoff, J. G. The M W M program for developing language abilities. Ridgefield, New Jersey: Educational Performance Associates, 1972.

Sloan, M. Glossary: terms associated with exceptional children. Austin: Educational Service Center XIII. (no date).

Stutsman, R. Guide for administering the Merrill-Palmer scale of mental tests. New York: Harcourt, Brace & World, Inc., 1948.

Tarczan, C. An educator's guide to psychological tests. Springfield, Illinois: Charles C. Thoman, Pub., 1972.

Telford, C. W., Saurey, J. M. The exceptional individual (2nd edition). Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972.

Terman, L., Merrill, M. Stanford-Binet intelligence scale form L-M: Manual for the third revision. Boston: Houghton Mifflin Company, 1973.

Wechsler, D. Manual for the Wechsler intelligence scale for children--revised. New York: The Psychological Corporation, 1974.

Wechsler, D. Manual for the Wechsler preschool and primary scale of intelligence. New York: The Psychological Corporation, 1967.

Zimmerman, I. L., Steiner, V. G., Evatt, R. L. Preschool language manual. Columbus, Ohio: Charles E. Merrill Publishing Co., 1969.

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